MONTGOMERY COUNTY COUNCIL

FY03 INTENSIVE BUDGET REVIEW PROJECT # 1

THE MONTGOMERY COUNTY DEPARTMENT OF PARK AND PLANNING'S WASTE MANAGEMENT PRACTICES

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EXECUTIVE SUMMARY

The Montgomery County Department of Park and Planning places high value on providing high quality services. In terms of waste management, County parks are largely free of litter. The Department strives to place minimal burden on park users; trash-cans are conveniently located and frequently emptied.

This report assesses the Department's waste management practices. Specifically, it evaluates the Department's approach to on-site collection and removal of park-user waste, illegally dumped material, waste generated from maintenance activities, and other employee generated waste.

Staffing and Use of Vehicles. The Department primarily uses in-house staff and trash trucks to collect and dispose of park-user waste deposited in trash cans. Staff empty trash cans at the heavily used regional, recreational, and local parks daily; and at other parks at least once a week. Park and Planning staff also collect waste from select administrative, enterprise, and Department of Recreation facilities. The Department hires a contractor to collect a relatively small amount of waste and recyclable material stored in dumpsters and other receptacles.

The Department uses non-trash trucks (e.g., pick-up trucks, dump trucks) to collect illegally dumped waste found in parks. Most waste generated from maintenance activities is also taken to the transfer station in non-trash trucks.

Analysis of Waste Data. In 2002, Department facilities generated over 2,450 tons of trash and over 1,250 tons of recycled materials. Staff from the Northern and Southern Regions disposed over 1,400 tons (60%); staff from Central Maintenance and Natural Resources Divisions disposed over 500 tons (20%); and a contractor disposed an amount estimated at 500 tons (20%). Analysis of the Department's 2002 solid waste data indicates that:

- Northern and Southern Region staff used trash trucks to deliver about 700 tons of waste to the transfer station; these trash trucks frequently visited the transfer station well-under capacity.
- Non-trash trucks delivered over half of the Department's waste disposed at the transfer station; the majority of this waste is bulky material not suitable for trash trucks.
- The Department paid contractors for over 2,000 tons of dumpster capacity; an estimated 500 tons (25%) of that capacity was actually used.

Analysis of Costs. The Department spends at least $3.3 million a year to manage solid waste. Labor costs account for 90% of total expenses. Factors that affect labor costs include the: amount of waste; frequency of collection and trips to the transfer station; distance between parks and to the transfer station; capacity usage of equipment and dumpsters; and number/location of trash-cans.

On-site waste activities such as emptying trash cans, litter control, clean-up of illegally dumped material, and waste from employee activities cost about $2.6 million. The other $0.7 million pays for the removal and off-site transportation of waste by in-house staff and the contractor.

Trash-cans in remote locations require the longest travel time to reach and cost the most on a "per can" basis. Trips to the Transfer Station also can be time consuming due to travel and waiting time at the disposal site. Minimizing the number of trips to the Transfer Station can clearly reduce costs.

Using in-house staff to remove and transport trash costs four to eight times as much as similar services performed by a contractor. Private waste contractors maximize the efficiency of their resources by routing trucks so that vehicles minimize down time and are near to full capacity when tipped.

Approaches Used in Other Places. Legislative staff interviewed park managers from 20 other jurisdictions. Staff found that the jurisdictions continually strive to achieve greater efficiencies, while maintaining high levels of customer service. The jurisdictions use a variety of techniques to achieve this balance. Other park jurisdictions make greater use of dumpsters to manage park waste. Park managers cite that dumpsters reduce (or even eliminate) the cost of maintaining a fleet of trash trucks and reduce staff time handling and transporting waste.

Non-traditional approaches such as carry-in-carry-out programs (also known as trash-free parks) and large in-ground containers are also emerging as viable alternatives to managing park waste. Montgomery County residents are already familiar with carry-in, carry-out programs at the C&O Historic Canal Park, Seneca Creek State Park, and selected City of Rockville and County parks.

RECOMMENDATIONS

Fiscal constraints require a change in thinking and practice for both park users and the Department of Park and Planning. Changing waste management practices can promote the more efficient use of resources while preserving the Department's capacity to maintain well-presented parks and meet the high expectations of park users. Legislative staff recommend the Department implement the following set of new waste management practices:

Recommendation #1: Achieve a balance between customer service and the efficient use of resources by establishing guidelines that employ a variety of efficient waste management strategies; increasing the level of centralized decision-making; and assuming a higher level of responsibility by the park user and redirecting staff resources toward litter control.

Recommendation #2: Reduce the volume of waste handled by expanding the carry-in, carry-out program to all neighborhood parks, undeveloped parks, conservation areas, and selected local parks, and addressing the prevalence of illegally dumped material.

Recommendation #3: Improve the efficiency of waste management practices by consolidating waste and minimizing the number of trips to the transfer station. Options to explore include grouping trash-cans, increasing the use of dumpsters, piloting large in-ground containers, and implementing continuous path routing of trash trucks.

Recommendation #4: Enhance existing recycling efforts by focusing on parks/facilities that generate the greatest amount of recyclable waste including administrative buildings and facilities where food and beverages are sold and consumed.

Recommendation #5: Establish a program to monitor and evaluate the different strategies for improving the efficiency of waste collection and disposal practices. In particular, the program should explore the viability of the alternative strategies to manage waste at local parks.

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I. Introduction

A. Authority

Council Resolution 14-1395, FY 2003 Work Program of the Office of Legislative Oversight, adopted July 30, 2002; and the FY 2003 Intensive Budget Review (IBR) program, approved by the Council on July 30, 2002.

B. Scope & Definitions

This IBR project assesses the Montgomery County Department of Park and Planning's waste management practices. Specifically, the report evaluates the on-site collection and off-site removal of park waste from County parks. The report also discusses the removal of waste (including recyclable material) from office, maintenance, and other facilities maintained by the County's Department of Park and Planning.

To provide some comparative perspective, the report identifies the general approaches taken by other jurisdictions to managing park waste, including alternative waste management strategies such as "trash-free" parks.

Definitions of Terms

Park-user waste refers to waste material collected and removed from the County's parks, e.g., waste from picnics, ball games, concession stands. Park-user waste is usually located in trash cans, but ground litter also makes up a portion of this waste.

Illegally dumped waste refers to household or commercial waste illegally placed in a park. Examples include refrigerators, roof tiles, car bodies, tires, demolition material, and landscaping material.

Waste from park maintenance activities refers to the vegetative, demolition, and construction waste that is generated in the course of park maintenance activities.

Park waste refers to all three types of waste defined above as well as waste generated at administrative buildings.

C. Organization of Report

The report is organized as follows:

Chapter II, Background provides an overview of M-NCPPC's organizational structure and explains the role of the Montgomery County's Department of Park and Planning in managing park waste. It also details the type and number of parks in Montgomery County.

Chapter III, Current Waste Management Practices reviews the method and frequency of collecting and disposing park waste from the County's parks, and describes the pilot 'trash free' initiative and recycling program.

Chapter IV, Waste Data Analysis reviews data on the amount of recyclables and non-recyclable material generated by the Department of Park and Planning during calendar year 2002, and examines efficiency and effectiveness of current waste collection methods. It also presents the total estimated cost of managing park waste system-wide.

Chapter V, Approaches Used in Other Jurisdictions describes two traditional and two non-traditional approaches to managing park-user waste identified through interviews with staff from nine other counties, seven cities, three state park jurisdictions, and one federally operated national park.

Chapters VI, Recommendations presents Legislative staff's recommendations.

D. Methodology

County Council and Office of Legislative Oversight (OLO) staff members jointly conducted this project. Legislative Analysts, Marlene Michaelson and Aron Trombka participated from the central County Council staff, and Scott Brown, Legislative Analyst; and Shveta Geddam, Research Assistant participated from OLO.

Legislative staff gathered information for this project in numerous ways including document reviews, individual and group interviews, on-site observations, and conversations with staff from other jurisdictions. Legislative staff worked with Department of Park & Planning staff as well Executive Branch staff to compile process, workload, and other program data.

E. Acknowledgements

Legislative staff received cooperation from everyone involved in this study. Staff appreciate the information shared and insights provided by all who participated in this project. In particular, Legislative staff appreciate the assistance of M-NCPPC staff and the individuals from other jurisdictions that provided information for the IBR.

Legislative staff thank Charles Loehr, Don Cochran, Les Straw, Carl Falcone, Gordon Rosenthal, Karl Noyes, Ronnie Gathers, Mike Horrigan, Pete Boettinger, Gary Harman, William Gillette, Marty Aument, Ginny Moxley, Dave McGrady, Wendy Hanley, Jim McMahon, Doug Ludwig, Jamie Christianson, John Boyd, Jim Humerick, Jim Whitaker, Mark Pfefferle, and Tina Schneider from M-NCPPC.

Legislative staff would also like to thank the following people for their insights on park waste management practices: Bobby Wallace King County, WA; Patty Schooly, Orange County, CA; Bob Fererra, Westchester County, NY; Gudrun Jensen, Greater Vancouver Regional District, BC; Brian Daley, Fairfax County, VA; Earl Eyler, Frederick County, MD; John Byrd, Howard County, MD; Nancy O'Connor, Myrtle Beach, SC; Bob Downing, Portland, OR; Rick Rowe Virginia Beach, VA; Chris Bushman and Walt Brown, Maryland Department of Natural Resources; Bruce Chevis, Wisconsin State Parks; Steve Schilley, Delaware Division of Parks & Recreation.

II. Overview of Montgomery County's Park System

Chapter II. Findings:

1. The County's park system contains approximately 30,000 acres of parks, including 263 developed parks and 120 undeveloped parks. The majority of developed parks contain trash cans. Most undeveloped parks do not have trash cans.

2. The responsibility of collecting and removing park waste lies primarily with Park and Planning's Northern and Southern Regions. The Natural Resources, Central Maintenance, and Enterprise Divisions also play a role in managing park waste.

3. In FY 03, Park and Plan allocated $7 million and 124 workyears to the Northern Region to maintain 150 parks. In the same fiscal year, the Southern Region received over $9 million and 197 workyears to maintain 233 parks.

4. The Northern Region encompasses the less populated and more rural areas in the County. Northern Region staff operate from one of five Maintenance Areas: Little Bennett; Black Hill, Rock Creek, Shady Grove, and Olney Manor.

5. The Southern Region contains the County's densely populated, urban areas. Southern Region staff operate from one of four Maintenance Areas: Meadowbrook, Cabin John, Wheaton, and Martin Luther King.

6. Park and Planning categorizes the larger Regional, Recreational, Special, Stream Valley, and Conservation parks as 'county-wide parks.' The smaller parks (used primarily by nearby residents) are classified as 'community-use parks' and include Urban, Neighborhood, Local, and Neighborhood Conservation Area parks.

A. The Governance Structure

Established by State law, the Maryland-National Capital Park and Planning Commission (M-NCPPC) is a bi-county (Montgomery County and Prince George's County) agency that manages public parkland and provides land use planning. The Commission prepares and administers Master Plans for the physical development of most of the bi-county area.

A ten-member Commission made up of the five Montgomery County Planning Board Commissioners and the five Prince George's Planning Board Commissioners governs M-NCPPC. The respective Planning Boards meet at least once a week to decide planning, zoning, subdivision, and park matters in each County; the full Commission meets the third Wednesday of the month.

The Montgomery County Department of Park and Planning is headed by the Director of Park and Planning, who reports to Montgomery County Planning Board. The Department oversees the acquisition, development, and management of the County's park system. As shown on the organizational chart (page 5), the Department largely consists of seven divisions. The responsibility of managing park waste lies primarily with the Northern and Southern Regions. The Natural Resources, Central Maintenance, and Enterprise Divisions also play a role in managing park waste.

B. Type and Number of Parks

The County's park system contains approximately 30,000 acres of parks, including 263 developed parks and 120 undeveloped parks.[1] Attachment 1 (see © 1) lists the type and number of parks as well as the type and number of park facilities in the County.

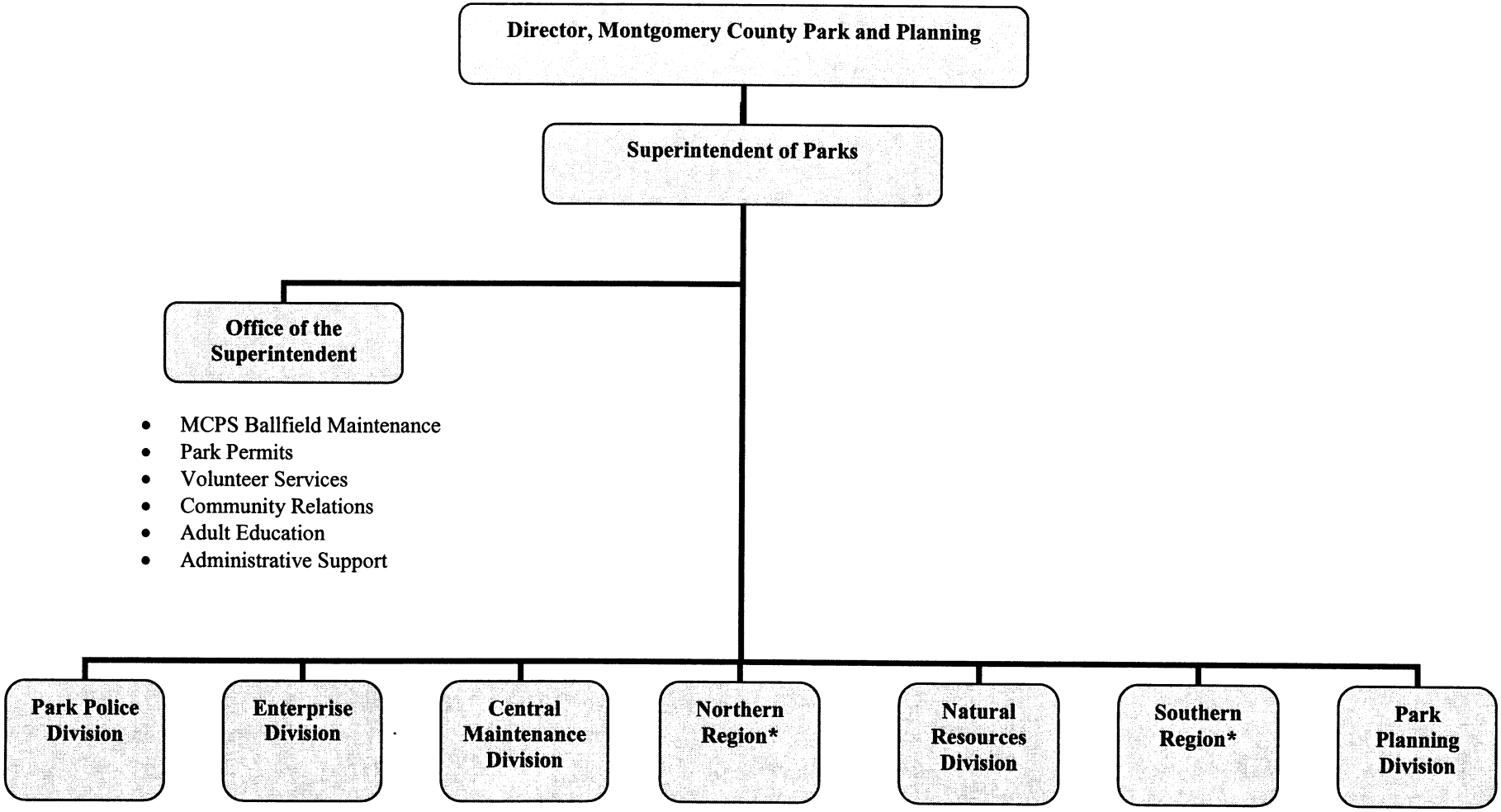
County-wide Parks[2]

The Department of Park and Planning categorizes the County's larger parks that serve regional, recreation or conservation needs as County-wide parks. These parks represent over 90% of the total County park acreage (or more than 25,000 acres). The five types of County-wide parks are as follows:

1. **Regional Parks** are large parks (generally more than 200 acres) that offer a wide range of recreation opportunities and facilities. Regional parks typically provide picnic/playground areas, tennis courts, athletics fields, campgrounds, and water-oriented recreation areas. The County's Park, Recreation, and Open Space Master Plan requires that two-thirds of a Regional Park be retained for conservation.

[1] Source: M-NCPPC's Proposed FY 04 Budget.
[2] Source: Park, Recreation, and Open Space Master Plan, July 1998.

EXHIBIT 1: DEPARTMENT OF PARK AND PLANNING ORGANIZATIONAL CHART



* The responsibility of managing park waste lies primarily with the Northern and Southern Regions.

2. **Recreational Parks** offer similar features as a Regional park, but are smaller (about 50 acres) in size. Unlike a Regional park, a Recreational park is not required to preserve two-thirds of its area for conservation purposes.

3. **Special Parks** contain and preserve features of historic or cultural significance. Facilities provided at special parks include agricultural centers, gardens, small conference centers, and historic structures.

4. **Stream Valley Parks** form the foundation of the park system, extending as greenways throughout urban and non-urban areas. Stream Valley parks offer hiker/biker trails, fishing, picnicking, and playground areas.

5. **Conservation Area Parks** are large areas that preserve natural, archaeological, or historic features and are acquired specifically for environmental preservation purposes. Conservation Area parks offer trails, fishing areas, nature study areas, and informal picnic areas.

Community-Use Parks[3]

The Department of Park and Planning classifies smaller parks, primarily used by nearby residents, as Community-use parks. There are four types of Community-use parks:

1. **Urban Parks** are very small parks (approximately one acre) that serve central business districts or other more urbanized areas. Urban parks generally offer sitting/picnic areas, play equipment, courts, and shelters.

2. **Neighborhood Parks** are small walk-to parks that offer informal recreation in residential areas. Neighborhood parks provide about 2.5 acres of open space, developed with play equipment, play fields, sitting areas, shelters, tennis, and multi-use courts. These types of parks do not have regulation size ballfields.

3. **Local Parks** are about 10 to15 acres in size and contain athletic fields, tennis, and basketball courts, picnic and playground areas. Local parks offer regulation size athletic fields that can be reserved for game play.

4. **Neighborhood Conservation Areas** are small pieces of parkland preserved in residential areas. Neighborhood Conservation Areas are generally conveyed to M-NCPPC during a subdivision process. The parks usually contain streams or stormwater management ponds.

[3] Source: Park, Recreation, and Open Space Master Plan, July 1998.

C. Roles of the Northern & Southern Regions

Staff in the Department's Northern and Southern Regions are primarily responsible for the maintenance of County parks. Staff activities include trash removal, mowing, graffiti removal, vandalism repair, restroom cleaning, and maintenance of athletic fields, playground equipment, landscapes, and trails.

The Northern and Southern Regions also have a Memorandum of Understanding with the County's Department of Recreation to collect waste from seven aquatic centers, 16 community centers, and six sports fields.

The Northern Region is responsible for maintaining parks located in Montgomery County north of Rockville. The Northern Region contains 82 local and neighborhood parks, three regional parks, nine recreational parks, three large lakes, three golf courses, a historical farm park, one equestrian center, one nature center, one visitor center and a campground.

Table 2 (page 9) shows that the approved FY 03 budget allocates the Northern Region approximately $7 million and 124 workyears to maintain 150 (developed and undeveloped) parks. Personnel costs represent almost 90% (approximately $6 million) of the Region's budget.

Staff operate from one of five Maintenance Areas: Little Bennett, Black Hill, Rock Creek, Shady Grove, and Olney Manor. Table 1 (page 8) lists the type and number of parks in each of the five Maintenance Areas. The Northern Region's management team consists of a Region Chief, an Operations Manager, and five park managers (one manager for each Maintenance Area).

The Southern Region is responsible for maintaining all other parks in the County . The Southern Region contains approximately 200 local, urban, stream valley, and neighborhood parks. The region also includes two regional parks, one recreational park, three nature centers, two ice rinks, two indoor tennis centers, two miniature trains, one historic carousel, two golf courses, two equestrian centers, three conference centers, Parkside Headquarters, Montgomery Regional offices, and Saddlebrook Park Police Headquarters.

Table 2 (page 9) shows that the approved FY 03 budget allocates the Southern Region approximately $9 million and 197 workyears to maintain about 230 (developed and undeveloped) parks. The Southern Region's personnel costs represent 87% (or approximately $8 million) of the Region's budget.

Staff operate from one of four Maintenance Areas: Meadowbrook, Cabin John, Wheaton, and Martin Luther King. Table 1 (page 8) provides the type and number of parks in each Maintenance Area. The Southern Region's management team consists of a Region Chief, two Operations Manager, and five park managers.

TABLE 1: NORTHERN REGION & SOUTHERN REGION– TYPES & NUMBER OF PARKS BY MAINTENANCE AREA

	Stream Valley	Regional	Recreational	Conservation[1]	Special	Urban	N'hood	Local	Other[2]	Total
Northern Region Maintenance Areas										
Little Bennett	4	1	4	3	0	0	3	10	0	25
Shady Grove	1	0	0	7	2	1	4	15	0	30
Black Hill	4	1	1	5	6	1	0	14	0	32
Rock Creek	1	1	2	5	3	0	3	7	0	22
Olney Manor	1	0	2	8	2	0	11	16	0	40
Sub Total	11	3	9	28	13	2	21	62	0	149[4]
Southern Region Maintenance Areas										
Meadowbrook	12	0	0	7	3	16	37	26	0	101
Cabin John	6	1	0	10	1	3	18	23	4	66
Wheaton	3	1	0	5	0	1	10	20	2	42
Martin Luther King, Jr.	2	0	1	3	1	0	7	11	0	25
Sub Total	23	2	1	25	5	20	72	80	6	234[5]
TOTAL	**34**	**5**	**10**	**53**	**18**	**22**	**93**	**142**	**6**	**383[3]**

Source: Park and Planning, January 2003

1. Includes Neighborhood Conservation parks.
2. Other parks include indoor tennis centers, conference centers, nature centers, historical and cultural parks.
3. Includes 120 undeveloped parks (33 Steam Valley; 4 Recreational; 53 Conservation; 2 Urban; 12 Neighborhood; 3 Special; and 13 Local).
4. 97 of the total 149 parks contain trash cans.
5. 166 of the total 234 parks contain trash cans.

TABLE 2: TOTAL NUMBER OF PARKS, FUNDING, & WORKYEARS BY MAINTENANCE AREA

	Total No. of Parks	FY 03 Budget ($ in 000's)	Workyears
Northern Maintenance Areas			
Little Bennett	25	$1,080	18
Shady Grove	30	$1,269	28
Black Hill	33	$913	17
Rock Creek	22	$859	17
Olney Manor	40	$1,150	22
Other[1]	Not Applicable	$1,638	23
Sub-Total	150	$6,909	124
Southern Maintenance Areas			
Meadowbrook	101	$2,504	62
Cabin John	66	$2,134	43
Wheaton	42	$2,368	53
Martin Luther King Jr.	25	$1,004	22
Other[2]	Not Applicable	$1,200	17
Sub-Total	234	$9,210	197
TOTAL	**383**[3]	**$16,119**	**321**

Source: M-NCPPC's Proposed FY 04 Budget

1. Other includes: Black Hill Visitor Center; Meadowside Nature Center; and administration buildings.
2. Other includes: Locust Grove Nature Center; Brookside Nature Center; and administration buildings.
3. Represents 120 undeveloped and 263 developed parks.

D. Roles of the Natural Resources, Central Maintenance, & Enterprise Divisions

Natural Resources Division provides program management and operational services in horticultural, arboricultural, landscaping, nursery production, public gardens, stormwater management, and natural resources management County-wide. Specific activities performed by staff in the Natural Resources division include:

- Removal of hazardous trees;
- Renovations of athletic fields;
- Maintenance of stormwater ponds;
- Reforestation of parks;
- Removal of non-native plants; and
- Restoration of native plants.

A large percentage of waste from Natural Resources Division activities is usually reused as compost, chips, and dirt for landscaping purposes. (see © 13 for details)

Central Maintenance Division includes three major functional sections: Fleet Management, Construction Trades management, and the Administrative Program.

- The Fleet Management program provides centralized vehicle and equipment maintenance;
- The Construction/Trades Management program provides centralized maintenance repair and remodeling of the park system's facilities, utilities, as well as construction of new facilities; and
- The Administrative Program provides leadership and administrative support for the division.

Central Maintenance recycles/reuses many automotive products. (see © 13 for details)

Enterprise Division administers for the enterprise fund. The Enterprise Fund receives revenue from five golf courses, three ice rinks, three social-conference centers, and two indoor tennis facilities. The Division manages other revenue earning park facilities such as, Lake Needwood and Black Hill boating facilities, Little Bennett campgrounds, five regional park picnic shelters, the activities center at the Agricultural History Farm park, and the South Germantown miniature golf & splash playground, Cabin John and Wheaton Miniature Trains, Wheaton Carousel, and fee-based activities at Brookside and McCrillis Gardens. Management of the individual facilities is the responsibility of the Regions.

A contractor removes waste from 32 dumpsters located at 13 (of about 20) Enterprise facilities (see Attachment 4 at © 52 for a list of facilities with dumpsters). Northern and Southern Region trash crews service Enterprise facilities that do not have a dumpster.

III. Current Waste Management Practices: Park & Planning

Chapter III. Findings:

1. Parks staff take great pride in a park's appearance and are oriented towards customer service. Trash cans are conveniently located, frequently emptied, and parks are generally free of litter.

2. For the large majority of parks, the Northern and Southern Regions use in-house staff and equipment to collect and dispose of park waste. Park managers report that in-house staff are also trained to identify and report on maintenance issues.

3. A contractor collects waste contained in dumpsters at 13 Enterprise facilities, six maintenance facilities, three administrative buildings, and selected parks. Park staff collect and remove waste from park facilities that do not have a dumpster, including M-NCPPC's Montgomery Regional Office.

4. Park managers assign at least two staff members per trash truck to collect and dispose waste found in and around trash cans. Staff report that regional and recreational parks, followed by local parks, generate the greatest amount of trash. In some parks, managers have begun to group cans or relocate cans closer to the road to facilitate more efficient refuse collection.

5. Park managers report significant illegal dumping of home and commercial waste at County parks. Illegally dumped waste is taken to the County's transfer station in vehicles other than trash trucks. Many community volunteers assist in the clean up of illegally dumped material.

6. Park and Planning hires a contractor to haul recycled paper, glass, plastic, and aluminum cans from 21 collection/consolidation points across Enterprise facilities, three of the five regional parks, several maintenance yards, and office buildings.

7. Most of the recommendations contained in a recent recycling study released by M-NCPPC are yet to be implemented. Recommendations are consistent with Legislative staff's beliefs on improving recycling performance.

8. Park staff indicated that it is still too early to judge the success of the pilot trash-free program and would like to reserve their opinion until after summer, when parks receive peak usage. However, park managers are optimistic about the potential success of the program.

A. Overview

The Department of Park and Planning collects and removes approximately 2,500 to 3,500 tons of waste annually from its administrative buildings, parks, and other facilities.[4] Waste is generated through the day-to day activities of park-users and park employees. The County's parks also receive a significant amount of illegally dumped material. A contractor removes waste from 20 designated sites and staff remove waste from all remaining parks/facilities.

This chapter reviews the method and frequency of collecting and disposing park waste from the County's parks and facilities.[5] The chapter also describes the pilot 'trash-free' initiative and recycling program. This chapter describes a range of practices employed by park staff to collect and remove waste. Park and Planning delegate the responsibility of implementing these practices to individual park managers. Therefore, practices differ among the nine Maintenance Areas.

B. Managing Park-User Waste

This section reviews the Department of Park and Planning's approach to the collection and disposal of park-user waste. Part (1) outlines the activities of in-house staff and Part (2) explains what collection and disposal activities are contracted out.

1. Collection and Disposal of Park-User Waste by In-House Staff

The Northern and Southern Regions use in-house staff and Park Department equipment to collect and dispose of park-user waste from the majority of County parks. Park managers across both Divisions (except for the Martin Luther King Jr Maintenance Area) typically assign two person crews to collect and dispose of park-user waste from parks within respective areas. Wheaton's trash-crew also collect and dispose waste from four parks in the Meadowbrook Area and 17 parks within the Martin Luther King Jr Maintenance Area (excluding Martin Luther King Recreational Park).

On scheduled collection days, a trash crew sets out in the morning and follows a designated collection route. At each park, both crew members transfer the waste from the trash cans to a large plastic receptacle, which is then hand carried (or dragged) and emptied into the rear of the refuse vehicle. At some locations, the driver can place the vehicle in close proximity to the trash cans; in other locations, staff must walk to remote trash cans and carry the waste to the truck for disposal. Staff report that regional and recreational parks, followed by local parks, have the greatest number of trash cans and generate the greatest amount of trash.

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[4] Section IV provides further details on the quantities of park waste.

[5] See page 23 for a definition of the different waste terms.

At the end of the route, park managers direct trash crews to either:

- Empty the truck at the County's Transfer Station located at Shady Grove before returning to their respective maintenance facility;

- Return to the maintenance facility and empty the truck at the Transfer Station the following morning, before commencing collection; or

- Return to the maintenance facility and resume collecting trash the next scheduled day.

Park managers report that trash-crews serve a dual role. In addition to collecting trash, crews are also expected to assess and report on other park maintenance needs (e.g., graffiti or a facility in disrepair). Park managers believe that this is one of the key ingredients of maintaining a well presented park. Park managers also report that maintenance staff are motivated to maintain parks to the highest possible standards.

Legislative staff believe that the Department of Park and Planning provides excellent service to County residents. Trash cans are conveniently located, frequently emptied, and parks are generally free of litter. Park staff's pride in the presentation of parks is clearly evident and commendable.

Refuse Receptacles

The Northern and Southern Regions use 55-gallon open steel cans (generally hung from "swing posts") as park-user waste receptacles. Park managers determine the number and location of trash cans. The cans are located where park-user waste is most likely to be generated, e.g., concession stands, picnic tables, ball fields, and athletic fields. In some parks, managers have begun to group cans or relocate cans closer to the road to facilitate more efficient refuse collection.

Table 3 (page 14) shows the number of cans located in the various types of County parks. The heavily used parks, such as the regional and recreational parks, have the largest number of cans, followed by local and urban parks.

Although reasonably robust, the trash cans often require maintenance due to high use and exposure. Park Managers report that staff spend 1-3% of their time maintaining refuse receptacles. Managers advise that they have piloted other types of receptacles, such as plastic containers, but found that the steel cans require less maintenance and last longer.

TABLE 3: NUMBER OF TRASH CANS BY PARK CATEGORY

Category of Park	Number of Trash Cans
Stream Valley Parks	0 – 5
Regional Parks	50 – 75
Recreational	30 - 50
Conservation Parks*	0 – 5
Special Parks	5 - 10
Urban Parks	1 – 10
Neighborhood Parks	1 – 5
Local Parks	1 – 20
Other**	1 – 10

Source: Department of Park & Planning, January 2003

* Includes Neighborhood Conservation Parks.
** Other includes nature centers, historical farm parks, etc

Equipment Used to Collect Park-User Waste

The Parks Department owns ten trash trucks. Five of the trash trucks can hold up to eight-cubic yards of waste and the other five can hold up to 16-cubic yards. The smaller vehicles cost approximately $60,000 and the larger trucks cost approximately $75,000.

Trash trucks are only suited to collect compactable materials such as park-user waste. Park managers generally use other vehicles such as dump trucks and pick-up trucks to collect bulky materials (e.g., tree stumps) and illegally dumped waste (e.g., commercial and household items). Dump trucks and pick-up trucks are used to collect bulky materials because non-compactable waste (e.g., metal or wood piles) can cause severe damage to a trash truck.

Park managers report that they use dump trucks and pick-up trucks to collect park-user waste on days when the trash truck is not scheduled to collect from a park or where sufficient amounts of park-user waste has accumulated after the trash truck's scheduled visit. Waste collected by these vehicles is either disposed of in a dumpster at the Area's maintenance yard, taken directly to the transfer facility, or disposed in the trash truck when it returns to the maintenance facility.

The Department assigns the ten trash trucks as follows:

- The five eight-cubic yard trash trucks are assigned to the five Maintenance Areas in the Northern Region;

- Four of the 16-cubic yard trash trucks are assigned to four of the Maintenance Areas in the Southern Region. The Wheaton Region has two vehicles, one for the regional park and another to collect from the remaining parks in Wheaton, four parks in the Meadowbrook and 17 parks in the Martin Luther King Jr. areas. Meadowbrook and Cabin John Areas are provided with one vehicle each; and

- The fifth 16-cubic year truck is assigned to the Central Maintenance Division and is used as a spare vehicle for the Northern and Southern Regions.

Frequency of In-house Collection

Attachment 4 at © 50-51 shows the scheduled collection frequency of park-user waste in the Northern and Southern Regions. During the warmer months, both Northern and Southern Region staff collect waste daily or as required from the large regional and recreational parks. Waste from the other parks such as local, neighborhood, and urban parks is collected two to three times a week.

As expected, the frequency of collection in both the Northern and Southern Regions decreases during the winter months of November through February. In addition to this formal schedule, Park Managers estimate that 70% to 90% of total staff time collecting waste is spent on litter control and special clean-up operations, and the other 10% to 30% of waste collection time is spent collecting illegally dumped material.

2. Collection and Disposal of Park-User Waste by Contractors

In addition to the Parks Department in-house collection service, the Department of Park and Planning hires a contractor to remove park waste from select park facilities. Specifically, in FY 03, the Department is spending $86,000 on a contract for the collection of park-user waste from 32 dumpsters located at 13 (out of about 20) Enterprise facilities, six maintenance facilities, select recreational parks, and three administrative buildings (see Attachment 4 © 52 for details). Park staff collect and remove waste from park facilities that do not have a dumpster, including M-NCPPC's Montgomery Regional Office.

Dumpsters located at maintenance facilities are generally used to contain waste generated by maintenance activities. However, at the Martin Luther King Jr. Recreation Park, management direct staff collect park-user waste from the park and transfer it to an onsite dumpster. A contractor collects the dumpster twice a week at a cost of approximately

$5,000 a year. At Olney Manor Recreational park, management also use their dumpster to store park-user waste at times when the trash truck is collecting park-user waste from other parks. At South Germantown Recreational Park, trash is bagged and placed in a dumpster.

Prior Contractual Experience. During the late 1970's and early 1980's, the Northern Region (then Maintenance and Development) contracted collection and removal of park-user waste from its local parks. Around 1984, the Department decided to discontinue the contract because trash cans were not consistently emptied by the contractor.

In the early 1990s, the Department issued an Invitation for Bid (IFB) for park-user waste collection and removal from the Southern Region (then called Region II). Of the 55 vendors that received an IFB, only four "no-bid" responses were returned. Parks staff interviewed many of the vendors and found that proposition was not economically viable. To make the proposition viable, the vendors recommended that the Department:

- Increase the term of the contract from one year to 3-5 years;
- Replace all trash cans with dumpsters located in accessible areas; and
- Pay the tipping fees for the disposal of park waste incurred by the contractor

At that time, the Department decided to continue to rely primarily upon in-house staff to collect park-user waste.

C. Collection and Disposal of Illegally Dumped Waste

Park managers report a significant amount of illegally dumped waste in County parks, especially in the more secluded park areas, and undeveloped parks. Examples of illegally dumped waste includes refrigerators, roof tiles, car bodies, tires, demolition material, household and small business refuse, and landscaping material.

In some instances, the quantity of illegally dumped material is so large that staff from the Central Maintenance Division are assigned to assist staff from the Northern or Southern Regions. Staff report that they remove the material from the park and take it directly to the County's transfer facility or hold it at the maintenance yard. Staff also report incidences of illegal waste to the Park Police, but acknowledge that it is usually difficult for the police to prove ownership of the material.

In an effort to keep the parks clean of illegally dumped waste, the Parks Department organizes community clean ups, which are carried out by community volunteers and staff in the spring and fall. These clean ups can generate significant amounts of waste.

Park staff estimate 30% of the Southern Region's refuse during the winter months is illegal waste collected by park staff or volunteers.

D. Collection and Disposal of Waste from Park Maintenance Activities

Maintenance activities performed by Park employees also generates waste. For example, activities performed by staff in the Natural Resources division may generate waste from the removal of hazardous trees, renovations to athletic fields, facility maintenance, and removal of non-native plants. Natural Resource staff advise that the majority of waste generated through their activities is yard waste which can be either composted or mulched (see © 13 for more details). Some especially large items (e.g., tree stumps) must be disposed as refuse at the County's Transfer Station.

Staff from the Northern Region report that some of the County's old farms now acquired as parkland contain old dump sites. Central Maintenance Division may generate waste from maintenance, repair, and remodeling of the park system's facilities, utilities, as well as construction of new facilities. Where possible, staff from this division reuse or recycle materials (see © 15 for details).

E. Collection from Administrative Offices

Park and Planning's three main administrative buildings are Montgomery Regional Office (MRO), Parkside, and Saddlebrook Police Headquarters (HQ). MRO contains the Commissioners' and planning staff's offices, Parkside provides office space for park-related staff, and Saddlebrook Police HQ provides offices for the Park Police. There are also numerous small Park and Planning Department offices throughout the County.

The Department of Park and Planning provide Parkside with a four-yard dumpster for regular waste and a four-cubic yard container for mixed paper (no containers for commingled material is provided – Legislative staff believe that the Boy Scouts collect commingled material from Parkside.) Saddlebrook Police HQ uses an eight-yard dumpster for regular employee generated waste and an eight-cubic yard container for mixed paper and two 90-gallon containers for commingled material. A contractor empties the dumpsters containing regular waste once a week and the receptacles containing recyclable material as required.

At MRO, custodial staff place five 55-gallon trash cans of regular trash on the curbside, Monday through Saturday, for a Southern Region trash-crew to collect. For recyclable material, a contractor collects a six-yard dumpster for recycled paper/cardboard and three 90-gallon blue bins for bottles and cans weekly

F. Recycling Activities

1. January 2002 Recycling Study

In 2001, at the County Council's request, the Department of Park and Planning conducted a study to assess and identify ways to improve its recycling efforts. In January 2002, the Department released a study titled 'M-NCPPC Recycling: Findings and Options' (see Attachment 2 at © 2-47 for the entire report). The study found that:

- Park and Planning recycles 46% of the Department's solid waste. (The percentage of material recycled in 2002 decreased to 34%, see page 24 for details.) Paper, plastic, aluminum, and metal account for only one-fourth of the recycled material, with yard waste and other reusable material accounting for the rest.

- Enterprise facilities, and most regional and recreational parks recycle bottles and cans.

- The recycling stream includes 208 tons of mixed paper, 58 tons of commingled material (see definition page 19), 883 tons of organic material composted or mulched, and five tons of other material.

- Not all office buildings and park facilities offer mixed paper and commingled material recycling for employees;

- Waste Management Incorporated (WMI) collects mixed paper and commingled material from 21 collection/consolidation points within the Park and Planning Department (see © 12). The locations are restricted to Enterprise facilities (e.g., golf courses), three of the five regional parks, several maintenance yards, and office buildings.

- Most park managers opt to avoid recycling altogether since they believe budgets do not allow for equipment and staff to maintain such a program. As a result, recycling material gets disposed.

The study recommends nine steps to improve M-NCPPC's paper, glass, plastic, and aluminum recycling rates (see © 27-29) over a three-year phasing schedule. The study's key recommendations include:

- Issue a recycling mandate/policy throughout MC- M-NCPPC;
- Hire a Recycling Coordinator;
- Develop an education program for staff and patrons;
- Place recycling containers in all office buildings and enterprise facilities;
- Expand recycling operations to all regional parks; and
- Identify the feasibility of expanding recycling program to all local parks.

2. Status of Study's Recommendations

Recycling Policy. As a result of the study, the Director of the Montgomery County Department of Park and Planning issued a policy directive on recycling in June 2002 (see Attachment 3 at © 48). The directive states that the "Montgomery County Department of Park and Planning is fully committed to reducing, reusing, and recycling waste generated throughout its parks system, offices, properties, and programs." The directive also states that the Department will create and maintain a recycling program for staff and/or patrons to recycle:

- **Mixed Paper:** e.g., newspapers and inserts, corrugated cardboard, cereal and other boxes, telephone books, computer and office paper, unwanted mail, catalogs and all other clean and dry paper.

- **Commingled Material:** e.g., aluminum cans, food and beverage jars and bottles, clear and colored plastic bottles with necks, metal food and beverage cans, and clean aluminum foil products.

- **Other Material:** e.g., asphalt, batteries, hazmat, fluids, electronics equipment, concrete, and yard waste.

Implementation of Recycling Policy. During the course of conducting this study, Park managers expressed support for the recycling policy and want to expand their recycling programs. However, Park managers advise that they do not have the staff or proper equipment to facilitate efficient recycling collection and disposal. Interviews with various Park managers indicate that implementation of M-NCPPC's recycling policy is left to individual park managers' discretion.

The Department provides containers for mixed paper, commingled material, vehicle-related material, and yard trim at most park facilities for employee use. (see Attachment 2 © 16) lists the recycling activities at park facilities). However, only selected parks throughout the County offer containers for commingled material for park users. Table 4 (page 20) shows the categories of parks that provide commingled recycling containers across the nine Maintenance Areas. Commingled recycling containers are provided at most regional parks, large recreational parks, and select local parks. The Little Bennett Area is piloting commingled material recycling containers at all parks. Park managers report that the pilot is still in its infancy and its success is yet to be evaluated.

Status of Other Recommendations. Park staff advise that the Department is currently putting together a Request for Proposals to solicit the services of a person to be responsible for energy conservation and recycling. Staff report that the proposals are due back in late March 2003.

Table 4: Provision of Commingled Material Recycling Containers*

	Regional Park	Recreational Park	Local Parks	Other Parks
Northern Region Maintenance Areas				
Little Bennett**	✓	✓	✓	✓
Shady Grove				
Black Hill	✓	✓	✓***	
Rock Creek	✓		✓***	
Olney Manor		✓		
Southern Region Maintenance Areas				
Meadowbrook				
Cabin John	✓			
Wheaton	✓	✓		
Martin Luther King Jr.		✓		

Source: Council Staff, January 2003

* The County's parks do not provide containers for patrons to recycle mix paper. However, most park facilities do provide recycling containers for mixed office paper, vehicle related material, and yard trim for employee use.

** The Little Bennett Maintenance Area is piloting commingled material recycling containers at all parks.

*** Containers for commingled material are only located at select local parks.

G. "Trash Free" Park Pilot Program

During review of M-NCPPC's FY 03 budget, the Council requested the Department of Park and Planning to initiate a pilot program to test the concept of "trash free parks" where park-users are required to carry out their waste. During the course of this study, Legislative staff learned that the term "trash-free" conjures an unrealistic image of a park devoid of trash. The term "carry-in, carry-out" program is a more fitting description of the approach.

The carry-in, carry-out concept shifts the burden of removing park-user waste from the jurisdiction to individual visitors. At a carry-in, carry-out park, park-users are required to take their trash with them when they leave. To encourage visitors to do so, the jurisdiction:

- Removes trash cans (including recycling containers) from the park;
- Installs signs indicating that the park is a carry-in, carry-out park; and
- Usually provides a garbage bag dispenser at strategic locations within the park.

The Parks and Planning Department selected the following six parks for the pilot program:

- Olney Manor Recreational Park (Northern Region);
- South Gunners Branch Local Park (Northern Region);
- Sligo Creek Stream Valley Park (Southern Region),
- Beach Drive Stream Valley (Southern Region);
- Capital Crescent Trail (Southern Region); and
- Gregorscroft Neighborhood Park (Southern Region).

In early September 2002, the Department removed all the trash cans from the above parks, with the exception of the athletic fields in the two Stream Valley Parks, and provided trash bags through dispensers, located throughout each park. The Department also installed signs requesting users to remove trash.

Status of the Pilot. Other than installing signs, park managers report that very little community education took place before removing cans from the parks. The managers advise that when the cans were first removed, staff (and the County Council) received many complaints. One manager cited more than 40 complaints in the first two weeks.

The most emotive complaints came from residents adjacent to the carry-in, carry-out parks. In some cases, the residents would collect litter from the park and place it in the park's trash cans. These residents now have to take the litter home and place it in their own containers. The managers all agree that the complaints have since slowed down.

Some of the park managers expressed concern over the provision of plastic bags at carry-in, carry-out parks. Checking whether the dispenser needs refilling replaces one maintenance task with another. They also state that some park-users fill the bags with trash and leave it next to the dispenser.

However, the general consensus among the Park staff is that it is still too early to judge the success of the program and that they would like to reserve their opinion of the pilot until after summer, when parks receive peak usage. Nonetheless, park managers remain optimistic about the potential success of the program.

Other Experiences in Montgomery County. Legislative staff learned that the Department previously experimented with the carry-in, carry-out concept. In 1989, the Department removed the trash cans at Layhill Park, which contains four soccer fields and a number of other fields, for approximately three years (1989-1992). Department documents indicate that the litter increased significantly and the cans were replaced. Glen Hills Park in the Cabin John Maintenance Area was also a carry-in, carry-out park during the early 1990's. This park also received a significant increase in litter and the trash cans were shortly reinstalled. In 2000, the newly dedicated Stonehedge Park was opened as a carry-in, carry-out park. Within two months of opening, cans were installed due to large quantities of litter.

Legislative staff note that Montgomery residents are accustomed to carry-in, carry-out programs operated successfully at the C&O Canal Historic Park, in all state parks, and in the City of Rockville. Also, it appears that M-NCPPC existing policy for general facility and field use requires that permit holders is to "carry-out" their trash. According to staff, the policy is not implemented.

IV. Waste Data Analysis

Chapter IV. Findings:

1. The Department of Park and Planning spends at least $3.3 million a year to manage solid waste. By far, labor constitutes the most important cost component of managing park waste, comprising approximately 90 percent of the total $3.3 million cost estimate.

2. Factors that affect total costs include the: frequency of collection; number of trips to the transfer station; distance between parks and to the transfer station; capacity usage of equipment and dumpsters; number and location of trash cans; and amount of waste.

3. The cost of servicing a trash can is a direct function of time needed to reach that can. Trash cans in remote locations require the highest amount of travel time to reach, and therefore, incur the highest amount of labor costs on a per can basis.

4. Over the course of Calendar Year 2002, the Northern and Southern Region used ten trash trucks and 68 non-trash trucks to collect and dispose of park waste. On average, trash trucks visited the Transfer Station once a week while non-trash trucks carried waste between one and 36 times during the year.

5. Department's trash trucks often visit the transfer station well under capacity. In addition, approximately 40% of the trips made to the transfer station by Northern and Southern Region non-trash trucks were for light loads (less than half a ton).

6. While non-trash trucks transported about the same total annual tonnage as trash trucks, up to three-quarters of the waste carried in non-trash trucks may have been bulky items unsuitable for collection in trash trucks.

7. Last year, the Department paid contractors for over 2,000 tons of dumpster capacity and utilized and estimated 500 tons of that capacity.

8. Department removal and transport of trash from parks is performed at a cost several times greater than similar service performed by a contractor. Private waste contractors maximize the efficiency of their resources by routing trucks so that vehicles minimize down time and are near to full capacity when tipped.

This chapter analyzes data relating to Department of Park and Planning waste management responsibilities and practices. The chapter presents quantitative measures of waste collection and disposal practices of the Northern and Southern Regions, Central Maintenance and Natural Resources Divisions, and a private contractor. The chapter further examines the relative costs of different components of the Department waste management expenditures. Tonnage and cost calculations in this chapter are based on data from calendar year 2002.

A. Amounts of Waste Disposed and Recycled

In 2002, the Department of Park and Planning handled 3,719 tons of waste; 1,200 tons or 33% more than reported by the Department for 2001. Legislative staff are unable to identify the factors that contributed to the increase in waste generation as information does not exist on the composition or source of waste disposed by the Department. Annual variations in waste generation may be a product of several factors including the level of parks use, weather, modified recycling behavior, the amount of illegal dumping, and changes in Department maintenance, construction, and demolition activities. Exhibits 2 & 3 (page 25) compares the volumes of waste disposed, recycled, and/or reused by Park and Planning in 2001 and 2002.

Recycling. The Department reports that it recycled 1,265 tons or 34% of all waste handled in 2002.[1] While the Department recycled a slightly higher total weight of material in 2002 as compared to 2001, recycling as a percent of total waste decreased substantially due to a 1,200 ton increase in trash generated in 2002. Without completing a waste composition analysis, legislative staff cannot determine the amount of recyclable material contained in the stream of unrecycled waste and so cannot make a judgment about the strength of the Department's recycling performance.

The recycling data for both 2001 and 2002 show that the Department recycles more vegetative matter than commingled glass, plastic, paper, metals, and aluminum cans. In 2001 and 2002, commingled materials represent 11% and 9% of material recycled, respectively. The Department's recent recycling study includes recommendations to improve the commingled recycling rate (see page 18).

Disposed Waste Data. Legislative staff conducted an in-depth study of trash disposed from all Department facilities in Calendar Year 2002 (Table 5 page 25) details the amount of waste handled.). During the year, Department and contract staff disposed a total of 2,454 tons of trash. Records from the County's Solid Waste Transfer Station indicated that Department staff disposed 1,954 tons of trash during the year. Southern and Northern Region staff delivered nearly three-quarter of Department transported trash; Central Maintenance and Natural Resources staff delivered the remainder of the trash.

In addition to waste removed from parks by Department staff, a contractor removed waste from 32 dumpsters located at Department facilities. Park and Planning staff estimate that the contractor removed and disposed 500 tons of park waste during the year.

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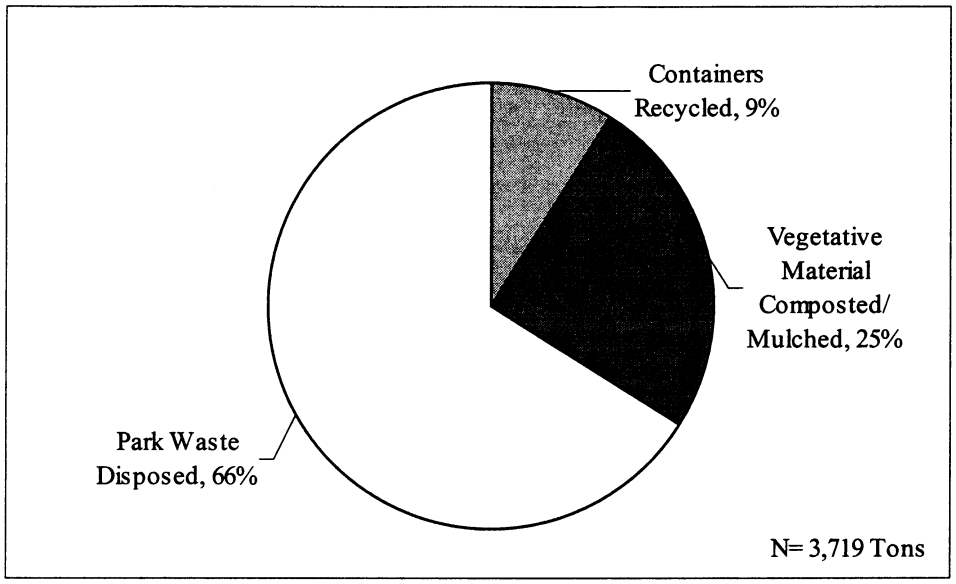
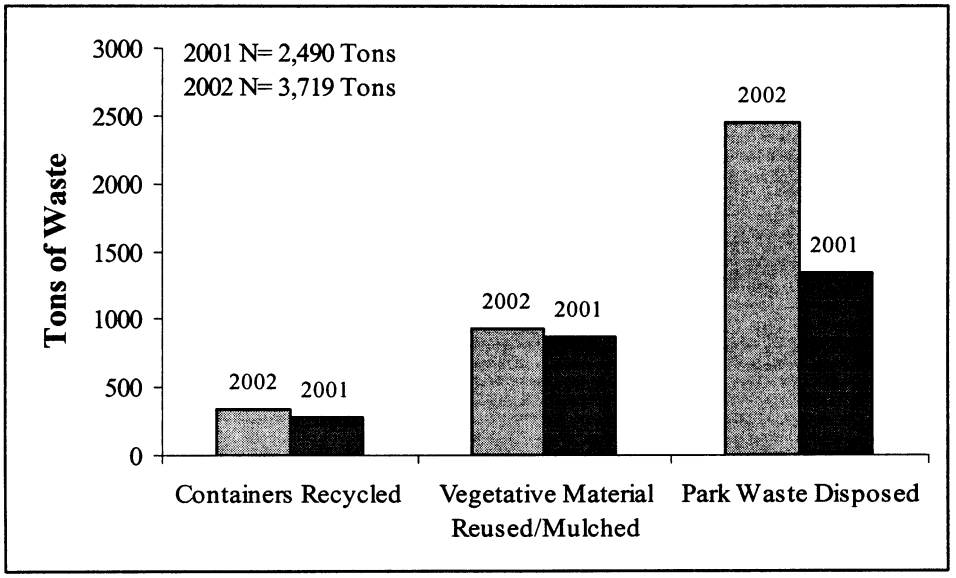
[1] There are different ways of reporting the recycling rate. This report does not audit the methodology used in calculating the 34% recycling rate reported by the Department

EXHIBIT 2: CATEGORIES OF PARK WASTE HANDLED IN 2002



Source: Division of Solid Waste Services & Montgomery County Park and Planning Park, January 2003

EXHIBIT 3: COMPARISON OF WASTE HANDLED IN 2001 & 2002



Source: Division of Solid Waste Services & Montgomery County Park and Planning Park, January 2003

TABLE 5: TONS OF WASTE DISPOSED

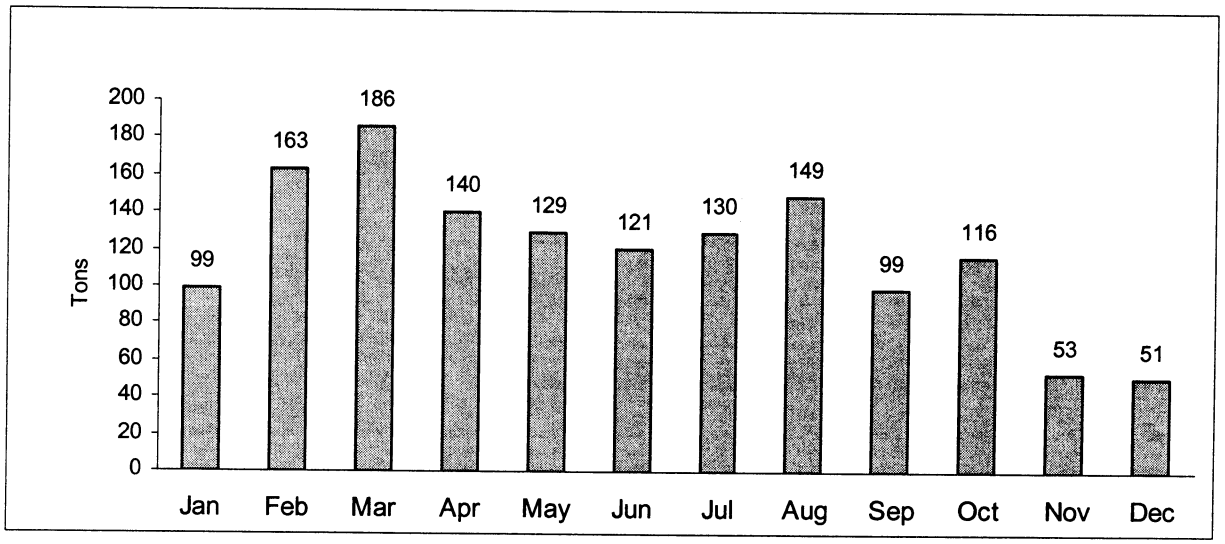
Waste Disposed By:	Tons Disposed (Tons)	% of Total
Southern and Northern Region Staff	1,435	58%
Central Maintenance & Natural Resources Staff	519	21%
Private Contractor	500	21%
Total	**2,454**	**100%**

Source: Division of Solid Waste Services & Montgomery County Park and Planning

B. Waste Disposed by the Northern and Southern Regions

As expected, the amount of waste collected by the Northern and Southern Region staff decreases in the off-peak months of November through February. In the peak months of March through October 2002, Northern and Southern Region staff collected and disposed over 1,070 tons of trash, three-quarters of the year's total.

EXHIBIT 4: TOTAL TONS OF WASTE COLLECTED BY MONTH BY THE NORTHERN AND SOUTHERN REGIONS



Source: Division of Solid Waste Services & Legislative Branch staff, January 2003

In contrast, staff collected 365 tons of trash during the off peak months. During these months, staff spend a significant amount of time cleaning and preparing parks for the on-coming season. Park managers believe that illegally dumped material accounts for a significant proportion of waste disposed of in the winter. Managers estimate that staff spend between 10% and 30% of their time in the off-season removing illegally dumped waste. Analysis of waste data shows that the Department adjusts the frequency of trash collection to correspond with seasonal variations of waste generation.

Transporting Waste. Over the course of Calendar Year 2002, the Northern and Southern Regions used ten trash trucks and 68 non-trash trucks (for example pickup and dump trucks) to collect and dispose of park waste. During 2002, each trash truck visited the Transfer Station, on average, once a week. Visits by non-trash trucks visits varied from vehicle to vehicle – some trucks visited only once during the year and others visited up to 36 times.

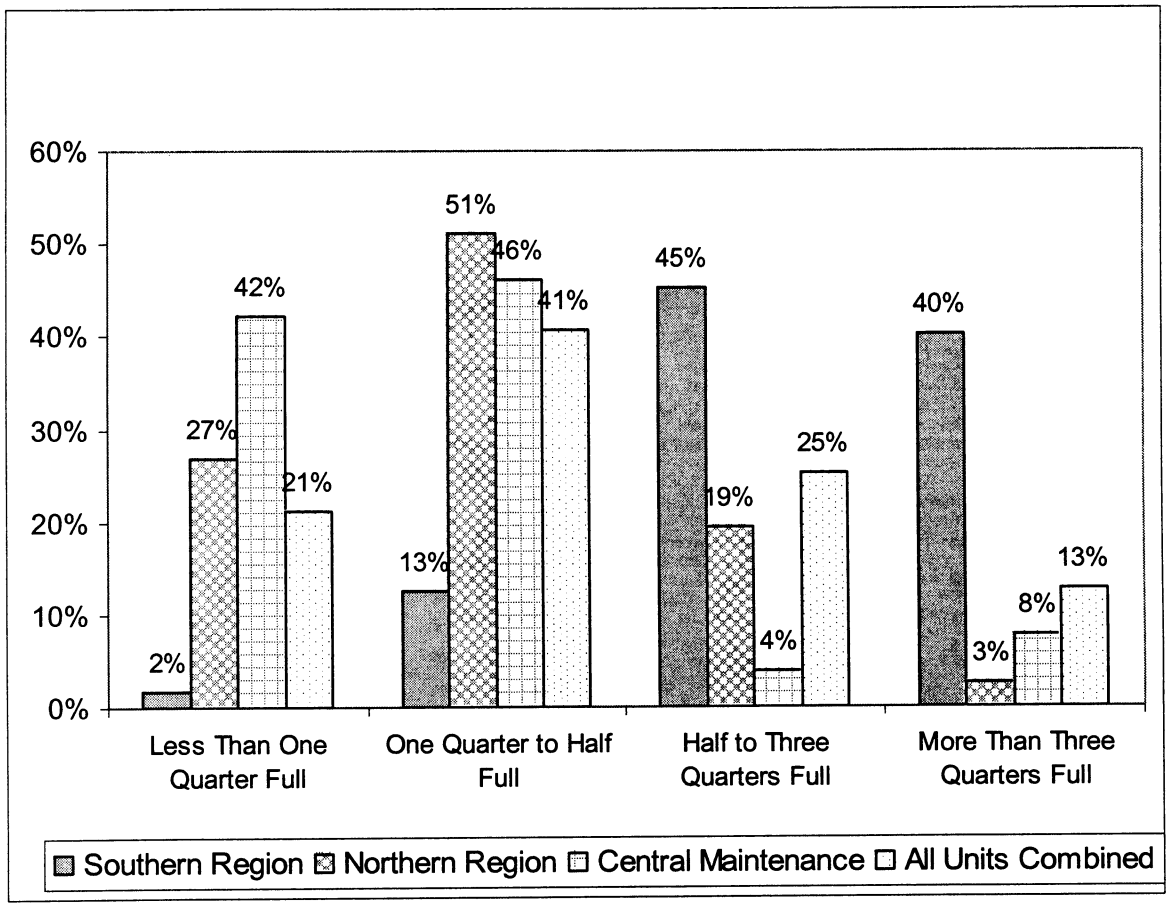
Table 6 on page 29 shows that trash trucks transported about half (715 tons) of the total waste disposed by Northern and Southern Region staff at the Transfer Station. Park staff delivered the other half to the transfer facility in dump trucks, pick-up trucks, or other vehicles.

Legislative staff performed an analysis of the usage of the capacity of Department trash trucks. Using waste industry standards for the weight of trash compacted in a trash truck, legislative staff has concluded that Department trash trucks routinely visited the Transfer Station at less than full capacity. The extent to which trucks were filled to capacity varied by region. Specifically:

- Northern Region trash trucks tipped 309 loads at the transfer station. On average, the trucks' loads were 37% full; and

- Southern Region trash trucks tipped 119 loads at the transfer station. On average, the trucks' loads were 70% full.

EXHIBIT 5: TRASH TRUCK CAPACITY UTILIZATION
(CALENDAR YEAR 2002 ACTUAL TIPS)



Source: Division of Solid Waste Services & Legislative Branch staff, January 2003

In general, a trash truck visits the transfer station under capacity because the size of the collection area does not generate a full load of waste; due to sanitary reasons, trash cannot be stored on board more than two to three days before tipping; and/or partial loads need to be tipped in anticipation of needing full capacity for weekends or large events.

Trips to the transfer station can be time consuming due to both travel time and waiting time at the transfer station. An average round trip from the last park serviced to the transfer station and back can take two hours. By filling trash trucks to 80% capacity the Department could have eliminated over 130 trips or 520 hours staff time (two staff at two hours per trip).

Park managers report that they have begun to consolidate non-putrescible waste at maintenance yards in an effort to minimize delivery of light loads to the Transfer Station.

As indicated earlier, non-trash trucks transported about half (720 tons) of the total park waste disposed of by Northern and Southern Region staff. There is no data to indicate what the waste stream is composed of but, Department staff estimate that approximately 75% of the waste transported to the transfer station in non-trash trucks consists of bulky/heavy items such as appliances, mattresses, tires, and engine parts, which cannot be compacted and placed in trash trucks. Based upon these estimates, about 167 tons (or 25% of 720 tons of disposed waste) would have been compactable waste (e.g., packaging, paper, food, etc), the type of trash that might be removed by a trash truck or placed in a dumpster.

TABLE 6: TRUCKS INVOLVED IN COLLECTING AND DISPOSING PARK WASTE

	# of Trucks	# of Tips	# of Tons (Tons)	Average Tons Per Tip[1] (Tons)	Average % Filled[2]
Northern Region					
Trash Trucks	5	309	277	0.9	37%
Other Trucks	33	311	469	1.5	Unknown
Sub-Total	38	620	746	1.2	Unknown
Southern Region					
Trash Trucks	4	119	398	3.3	70%
Other Trucks	35	199	251	1.3	Unknown
Sub-Total	39	318	649	2.0	Unknown
Central Maintenance & Natural Resources Divisions					
Trash Truck	1	26	40	1.5	31%
Other Trucks	22	251	519	2.0	Unknown
Sub-Total	23	277	559	2.0	Unknown
Total					
Trash Trucks	10	454	715 tons	1.6 tons	45%
Other Trucks	90	761	1,239 tons	1.6 tons	Unknown
Total	**100**	**1,215**	**1,954 tons**	**1.6 tons**	**Unknown**

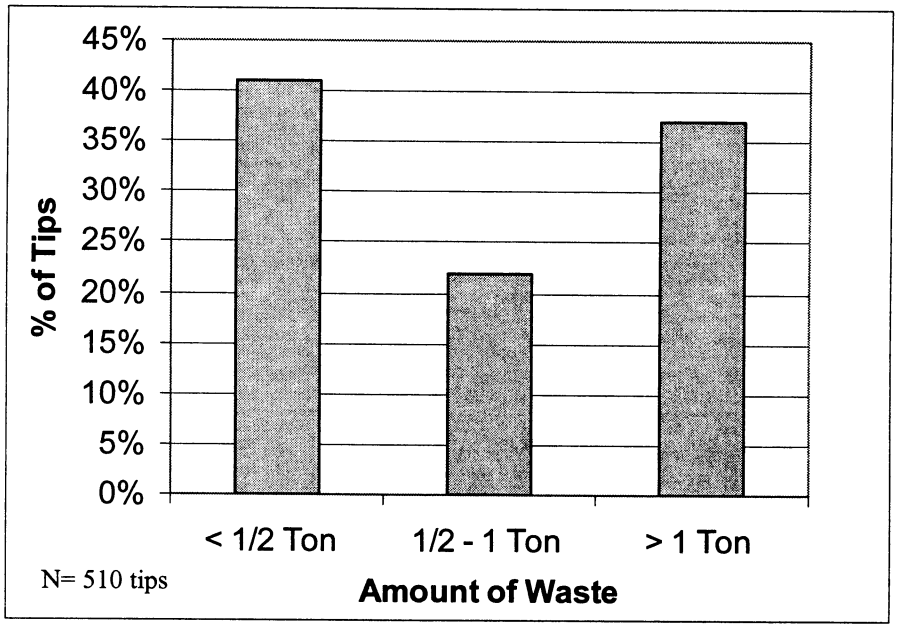
Source: Division of Solid Waste Services & Legislative Branch staff, January 2003

1. A Northern Region trash truck has the capacity to carry 2.4 tons. The Southern Region trucks have twice the capacity (or 4.8 tons) of Northern trash trucks. The capacity of the non-trash trucks is unknown. **2.** The figures shown are based on weight of waste collected and not volume of waste collected.

Exhibit 6 shows that approximately 40% of the Northern and Southern Region trips (over 200 separate trips) to the transfer station in non-trash trucks were for light loads, less than half a ton (or 1,000 pounds). Records indicate that in one case, 20 pounds (or 0.01 tons) of waste was delivered to the transfer station. On another occasion, a truck delivered 280 pounds (0.14 tons) of waste and returned later that same day with 400 pounds (0.20 tons) of waste. By way of comparison, the Department's smallest trash truck carries 4,800 pounds (or 2.4 tons) if filled to capacity.

Legislative staff believe that the intent behind these trips is a desire to keep parks as clean and presentable as possible by removing trash in any quantity when found. However, Section E of this chapter (page y) demonstrates that there are significant cost advantages in minimizing the number trips to the transfer station.

EXHIBIT 6: PERCENTAGE OF TIPS MADE BY NORTHERN & SOUTHERN REGIONS NON-TRASH TRUCKS BY WEIGHT



Source: Legislative Staff & Division of Solid Waste Services, January 2003

C. Waste Disposed by Central Maintenance and Natural Resources Divisions

Table 6 (page 29) shows that in 2002, Central Maintenance and Natural Resources staff disposed 519 tons of waste at the transfer station via non-trash trucks. A significant proportion of this waste was large/bulky items from maintenance activities such as tree stumps and construction debris. Analysis of the 2002 data shows that the large majority of trips made by Central Maintenance and Natural Resources staff to the transfer station was for very heavy loads greater than 4,000 pounds (or 2.0 tons) of waste.

D. Waste Disposed by a Private Contractor

The Department hires a waste contractor to empty 32 dumpsters located at 13 (out of about 20) Enterprise facilities, four maintenance facilities, and three administrative buildings. The dumpsters vary in size and collection frequency. Some of the dumpsters are collected two to three times a week, while others are collected as needed (see Attachment 4 at © 52 for further details.)

In total, the Department of Park & Planning pays for contractors for an aggregated annual dumpster capacity of over 2,000 tons. However, the Department estimates that the contractor removes only about 500 tons of waste from these dumpsters in a year. If the estimated actual tonnage is correct, the dumpsters (on average) were 25% full when emptied.

As businesses generally must reserve some excess dumpster capacity for periods of highest need, achieving a utilization rate of 100% is not a realistic standard. However, a capacity utilization rate as low as 25 percent suggests that the Department may be purchasing more dumpster capacity than would be warranted given current practices. Since contractors have fees based on size of dumpster and frequency of pickup (not volume of waste), this data implies that the size of dumpster or frequency could be adjusted to increase capacity.

E. Analysis of Costs

The two major cost components of managing park waste are: (1) on-site waste collection activities and (2) removal and off-site transportation. This section explains the factors that affect these components and provides a system-wide annual cost estimate of at least $3.3 million (see Table 7, page 32).

Legislative staff developed the $3.3 million cost estimate based on information received through interviews and discussions with park managers, analysis of waste disposal records obtained from the County's Division of Solid Waste Services, and reviews of current contractual arrangements. Cost estimates are also based on a number of conservative assumptions about the number of staff hours dedicated to waste management activities, employee salary rates, and vehicle maintenance, fuel and depreciation costs. By far, labor costs constitute the most important component of Department waste management expenditures, comprising approximately 90 percent of the $3.3 million estimate calculated by legislative staff.

TABLE 7: ESTIMATED COST OF MANAGING PARK WASTE – SYSTEM WIDE

Cost Components	Estimated Cost ($ in 000's)
On-Site Activities:	
Northern & Southern Regions	
Emptying Trash Cans	$515
Litter Control & Special Clean-Ups	$997
Clean-Up of Illegal Dumping	$427
Central Maintenance & Natural Resources Divisions	$524
Enterprise Facilities	$156
Sub-Total	$2,619
Removal and Off-Site Transportation:	
Northern & Southern Regions	
Waste via Trash Trucks	$395
Waste via Non-Trash Trucks	$120
Waste via Private Contractor	$ 13
Central Maintenance & Natural Resources Divisions	
Waste via Non-Trash Trucks	$80
Waste via Private Contractor	$ 4
Enterprise Division	
Waste via Private Contractor	$66
Other facilities[2]	
Waste via Private Contractor	$3
Recyclables[3]	
via Private Contractor	$19
Sub-Total	$700
TOTAL	**$3,319**[1]

Source: Legislative Staff & Park & Planning, January 2003

1. See tables listed in Attachment 4, © 9-55, for detailed assumptions and calculations.
2. Other facilities include: Parkside administration building, Central Park Ave, Police HQ.
3. Includes the system wide cost of hauling recyclables off-site.

1. On-site Waste Collection Activities.

On-site waste collection costs include the costs of collecting waste from a park/facility and placing it into a receptacle. The receptacle may be a trash can, dumpster, trash truck, or non-trash truck. Collection activities include litter control and special clean-up operations, and the collection of illegally dumped material.

The factors that affect the amount of labor needed to collect waste include: the amount of litter and illegally dumped material; the number of staff involved; and the number and location of receptacles.

Table 7 (page 32) details the costs associated with these on-site activities for the Northern, Southern, Central Maintenance, Natural Resources, and Enterprise Divisions. As shown, the total cost of on-site collection activities for these divisions is calculated at over $2.5 million a year (see Attachment 4x at © 49 for details on calculations).

As expected the Northern and Southern Regions incur the greatest proportion of on-site waste collection costs at about $2.0 million. Park managers estimate that 70% to 90% of total staff time collecting waste is spent on litter control and special clean-up operations, and the other 10% to 30% of waste collection time is spent collecting illegally dumped material.

2. Removal and Off-site Transportation

Removal and off-site waste transportation costs include costs associated with the activities performed to remove waste from a receptacle and transport to a disposal facility. Using in-house staff, the Department transports waste off-site using a combination of trash trucks and non-trash trucks. In addition, the Department has a contract with a private waste contractor to collect materials from dumpsters and recycling containers. Table 7 (page 32) shows that the estimated total cost of removal waste removal and off-site transport at $0.7 million. (See Attachment 4, © 49, for details.)

The factors affecting the cost of transporting waste by park staff include the distance between parks, the frequency of collection, the amount of litter and illegally dumped material, the distance to the transfer station, the capacity usage of equipment, and the frequency of trips to the transfer station.

Using data from two Maintenance Areas, Table 8, page 34, illustrates how these factors can impact the cost of servicing a park. For example, at Cabin John Regional Park, it takes six staff hours every day to empty 74 trash cans. It takes a similar number of staff hours to collect 61 trash cans at the Wheaton regional park. Legislative staff estimate that this service costs $2.76 (for Cabin John Regional Park) and $4.42 (for Wheaton Regional Park) per trash can per collection. Staff believe that the cost of servicing trash cans at Cabin John Regional Park maybe less than Wheaton Regional Park because the distance traveled to service cans and dispose of waste at the transfer station is greater for Wheaton than Cabin John.

Legislative staff calculate that the cost of servicing trash cans at non-regional parks in these two areas is nearly twice the cost of servicing cans at the regional parks. Servicing trash cans at regional parks costs less because staff do not have to travel from park to park collecting waste. Moreover, cans are consolidated around access points, picnic grounds, and other park facilities, which makes it reasonably efficient for the staff to service.

In contrast, non-regional parks can be located further apart and further from the transfer station. Non-regional parks also contain fewer, more widely dispersed trash cans located in places that are, at times, more difficult for vehicular access.

Ultimately, the cost of servicing a trash can is a direct function of time needed to reach that can. Trash cans in remote locations require the highest amount of travel time to reach, and therefore, incur the highest amount of labor costs on a per can basis.

TABLE 8: VARIABILITY OF COSTS BASED ON PARK TYPE*

	# of Parks with Trash Cans	# of Cans	# of Staff Hours	Weekly Collection Frequency	Combined Yearly Cost Per Can ($)
Regional Park:					
Cabin John	1	74	6	3-7 times	$2.76
Wheaton	1	61	8	3-7 times	$4.42
Other Parks:					
Cabin John	67	192	16	1-3 times	$4.94
Wheaton*	61	164	16	1-3 times	$7.12

Source: Legislative Staff, January 2003

* See Attachment 4 for origin of costs.
** Includes: 17 parks from the Martin Luther King Jr Area and four parks from the Meadowbrook Area.

Comparison with the Private Sector. Park staff estimate that the contractor hauls approximately 500 tons of waste each year, an amount equal to 25% of total dumpster capacity. If that amount is correct, legislative staff estimate (based on current contractual arrangements and charges) that the cost per ton for a contractor to haul waste from a park facility dumpster is between $100 and $200 per ton. If the dumpsters were 50% full when emptied, the cost would decrease to $50 to $100 per ton of waste.

Legislative staff estimate that the cost for the Northern and Southern Region to haul waste to the transfer station ranges between $400 and $750 per ton of waste (see Attachment 4, © 53-55, for details). Based on current practices, Legislative staff estimate

that the cost of hauling park-user waste to the transfer station by the Northern and Southern Regions is three to four times more expensive than private sector hauling (or up to eight times more expensive than private hauling of trash in dumpster utilized to 50% of capacity).

Transportation of waste off-site may be performed at a significantly lower cost by the private sector because the private waste contractors route trucks so that vehicles spend the least amount of down time tipping waste and ensure that trucks are near to full capacity when tipped. Private waste contractors also collect waste from other sources so that their fixed operating costs are spread over more tons of waste.

Some haulers engage in a practice known as "continuous path routing" wherein of a fleet of trash trucks follows one segment of a continuous designated route. Waste contractors calculate different start and end points for each trash truck along the path. The start and end times of each truck is determined by the capacity of the vehicle rather than the time of day or number of sites visited.

Waste Services Provided to the Recreation Department. The Department's Memorandum of Understanding with the County's Department of Recreation requires park staff to collect waste from seven aquatic centers, 16 community centers, and six sports fields. The Department charges the Recreation less than $4,000 a year for this service. Based on current practices, Legislative staff believe that the fees charged to the Department of Recreation cover less than half of the actual costs. Under pricing services may be leading the Recreation Department to select a less efficient option for trash removal.

V. Approaches Used in Other Jurisdictions

Chapter V. Findings:

1. Jurisdictions interviewed continually strive to achieve greater efficiencies, while maintaining high levels of customer service. The jurisdictions use a variety of techniques to achieve this balance. Legislative staff identified two traditional and two non-traditional approaches to managing park-user waste taken by 20 other jurisdictions:

   Traditional Approaches: (1) waste temporarily stored in dumpsters for later disposal; and (2) waste taken directly to a disposal facility.

   Non-Traditional Approaches: (3) carry-in, carry-out; and (4) waste taken to large in-ground containers.

2. Temporarily storing waste in dumpsters is the most commonly used strategy in the 20 sample jurisdictions. Park managers cite that dumpsters reduce (or even eliminate) the cost of maintaining a fleet of trash trucks and reduce staff time spent handling and transporting waste. Managers also believe that dumpsters can attract unwanted pests and illegally dumped material, and can be unsightly and odorous if not properly maintained.

3. Federal and state officials interviewed deem their carry-in, carry-out program successful because: (1) park-users have an environmental stewardship ethic; (2) decision-makers and park managers were committed to seeing the program succeed; (3) the program was implemented after an extensive public education effort; (4) the program was implemented uniformly throughout the park jurisdiction, i.e., state-wide; and (5) educational efforts were reinforced with enforcement on littering.

4. Discontinued carry-in, carry-out programs were typically deemed unsuccessful because of the sharp rise in complaints about the immediate increase in litter. The complaints came from concerned residents, park managers, and key decision-makers. In one jurisdiction, the program was abandoned two days after implementation.

5. Four of the twenty jurisdictions interviewed have installed or plan to install large in-ground containers that can store 500 to 600 pounds of park waste. In terms of efficiency, these jurisdictions report very positive results.

6. Jurisdictions interviewed commonly provide recycling containers at large recreational type parks, where visitors are likely to purchase or bring in recyclable material.

A. Introduction

This chapter summarizes the results of interviews with park managers from a selected sample of other jurisdictions with reputations of well-run park systems. These jurisdictions continually strive to achieve greater efficiencies, while maintaining high levels of customer service. The jurisdictions use a variety of techniques to achieve this balance.

The range of approaches used in these places to manage park-user waste can be grouped into two traditional and two non-traditional approaches:

Traditional Approaches

#1: Waste temporarily stored in dumpsters for later disposal.

#2: Waste taken directly to a disposal facility.

Non-Traditional Approaches

#3: Carry-in, Carry-out Parks (also known as trash-free parks).[1]

#4: Waste taken to large in-ground containers.

The 20 Sample Jurisdictions. Legislative staff selected jurisdictions based on performance data from the International City/County Management Association, recommendations from parks staff here and in other places, and jurisdictions known to have commendable park systems identified in the FY 02 Intensive Budget Review Project *Managing Park Maintenance Costs: A Comparative Study.* The jurisdictions selected are:

Counties	Howard County, MD; Baltimore County, MD; Frederick County, MD; Fairfax County, VA; King County, WA; Orange County, CA; Westchester County, NY; Three Rivers Park District, MN; and the Greater Vancouver Regional District, BC.
Cities	New York City, NY; Portland, OR; Rockville, MD; Myrtle Beach, SC; Virginia Beach, VA; Tulsa, OK; and Santa Ana, CA.
State Park Departments	Maryland, Delaware, and Wisconsin
National Park Service	C&O Canal Historic Park

Table 9 (page 38) shows the different approaches to managing park-user waste used in each jurisdiction.

Note to reader: *This section focuses on the collection and removal of park-user waste from other jurisdictions' parks systems. It does not address how the jurisdictions collect and remove illegally dumped waste or waste from administrative offices (see page 1 for definitions).*

[1] The term trash free conjures an unrealistic image of a park devoid of trash. Legislative staff learned that the phrase "carry-in, carry-out" is a more fitting description of the approach.

TABLE 9: WASTE MANAGEMENT APPROACHES TAKEN BY COUNTIES FOR VARIOUS CATEGORIES OF PARKS[1]

	Traditional Approaches		Non-Traditional Approaches	
Counties	**#1: Waste Stored Temporarily in Dumpster**	**#2: Waste Direct to Disposal Facility**	**#3: Carry-in, Carry-out**	**#4: In-ground Containers**
Montgomery County, MD	Select Recreational Parks	Large Majority of Parks	Piloting at Select Parks	
Baltimore County, MD	Recreational Parks	Passive & Local/Neighborhood Parks		
Frederick County, MD	Outlying Parks (Apr – Oct)	Majority of Parks (Apr – Oct) All Parks (Nov – Mar)		
Howard County, MD	All Parks		Program Discontinued	Piloting in April, 2003
Fairfax County, VA	Majority of Parks		Select Passive Parks	
King County, WA	All Parks			Considering Piloting
Orange County, CA	All Parks			
Westchester County, NY	Majority of Parks		One Recreational & four Neighborhood Parks	
Three Rivers Park District, MN	All Parks		Pilot Discontinued	
Greater Vancouver Regional District, BC	All Parks			

Source: Legislative Staff, January 2003

1. Categories of Parks:
Recreational Parks: Includes large parks (e.g., regional and recreational parks) that offer sporting amenities that attract county/city wide visitors.
Passive Parks: Includes parks (e.g., conservation and stream valley parks) that offer hiker/biker trails and other passive activities.
Neighborhood/Local Parks: Includes smaller parks that may offer playgrounds and other activities for nearby residents.

TABLE 10: WASTE MANAGEMENT APPROACHES TAKEN BY CITY, STATE & FEDERAL JURISDICTIONS FOR VARIOUS CATEGORIES OF PARKS [1]

	Traditional Approaches		Non-Traditional Approaches	
Cities	**#1: Waste Stored Temporarily in Dumpster**	**#2: Waste Direct to Disposal Facility**	**#3: Carry-in, Carry, out**	**#4: In-ground Containers**
New York City	Select Parks	Majority of Parks		
Portland, OR	Majority of Parks		Pilot Discontinued	Piloting at Select Parks
Rockville, MD	Select Recreational & Neighborhood/Local Parks		Select Neighborhood/ Local Parks	
Myrtle Beach, SC		2/3 of Parks		1/3 of Parks
Virginia Beach, VA	Majority of Parks	Select Neighborhood/ Local Parks	Pilot Discontinued	
Tulsa, OK	Majority of Parks	Select Neighborhood/ Local Parks		
Santa Ana, CA	Select Recreational & Neighborhood/Local Parks	Majority of Parks		
Federal/State[2]				
National Park Service			C&O Canal[3]	
Maryland			All Parks	
Delaware			All Parks	
Wisconsin			All Parks	

Source: Legislative Staff, January 2003

1. **Categories of Parks:**
   Recreational Parks: Includes large parks (e.g., regional and recreational parks) that offer sporting amenities that attract county/city wide visitors. Passive Parks: Includes parks (e.g., conservation and stream valley parks) that offer hiker/biker trails and other passive activities. Neighborhood/Local Parks: Includes smaller parks that may offer playgrounds and other activities for nearby residents.
2. State jurisdictions continue to provide trash receptacles at camping grounds.
3. The C&O Canal Historic park is a passive park containing recreational activities.

B. Traditional Approaches

Approach #1: Waste temporarily stored in dumpsters for later disposal.

Temporarily storing waste in dumpsters for later disposal is the most commonly used strategy in the 20 sample jurisdictions. This approach involves a system of dumpsters kept on-site or off-site for the temporary storage of park-user waste. In most cases, park managers hire a contractor to collect and haul the dumpster's contents to the jurisdiction's solid waste disposal facility.

Park managers interviewed report using dumpsters solely or in combination with other strategies (e.g., carry-in, carry-out or large in-ground containers) to manage park-user waste. For example, King County, Three Rivers Park District, Orange County, and the Greater Vancouver Regional District, use dumpsters solely for all parks. However, the counties of Fairfax, Westchester, Baltimore, Frederick, and the Cities of New York, Portland, Virginia Beach, Tulsa, and Santa Ana integrate dumpsters with other waste management strategies.

In some outlying parks in Frederick County, the dumpster is the only waste receptacle available during the summer months. Patrons are required to walk to the dumpster (usually located at the park's entrance or parking lot) to dispose of their waste. When the dumpster pick-up is contracted out, park staff do not have to handle park waste.

However, the more common use of dumpsters requires staff to transfer waste from trash cans to an on-site or off-site dumpster. To achieve this, park staff use a pick-up or dump truck to collect park-user waste from trash cans. The trash cans are usually lined with a disposable plastic bag that can be easily removed and placed in the rear of the vehicle. Staff then transfer the bag to the nearest dumpster. The jurisdictions' off-site dumpsters are usually located at maintenance facilities or large recreational parks.

The Benefits and Disadvantages of Using Dumpsters. Park managers cite the following benefits of hiring a waste contractor to empty the contents of a dumpster:

- **Reduces (or even eliminates) the cost of maintaining a fleet of trash trucks.** For example, Portland's Parks Department used to transport waste directly to a disposal facility. The City found that their fleet of trash trucks experienced frequent breakdown and was expensive to maintain and replace. The City decided to change tact and use dumpsters to manage park-user waste. The City no longer owns any trash trucks.

- **Reduces staff time spent handling waste.** In parks where the dumpster is the only type of trash receptacle, staff do not have to collect waste or drive to a disposal facility. This allows more staff time to concentrate on other maintenance activities. At one particular park in the Three Rivers Park District,

staff had collected trash from 55 trash cans twice a day on the weekends. The park manager removed about 40 trash cans and replaced them with seven small dumpsters for park-users to deposit their trash. The dumpsters are emptied on average three times a week. The result was less staff time managing park-user waste.

- **Reduces travel time.** In large active recreational parks that generate large amounts of waste, managers can direct staff to dispose of waste efficiently, without sending staff to a disposal facility. In geographically large park systems, staff lose potential productive work time transiting waste to a jurisdiction's disposal facility.

The park managers interviewed report that the major disadvantages of using dumpsters, if not properly maintained, are that:

- Dumpsters can attract unwanted pests and illegally dumped material;
- Dumpsters can be unsightly and odorous (especially in summer);
- Ground litter can often surround a dumpster; and
- The task of transferring waste from trash cans to a dumpster can be time consuming and labor intensive.

In addition, engaging contractors to haul waste can be expensive because a flat fee to collect dumpsters is generally charged, regardless of the amount of waste hauled.

Some jurisdictions have found ways to overcome these disadvantages. To help reduce the amount of illegally dumped material, the City of Rockville keeps dumpsters in a secured enclosure and removes dumpsters off-site during the winter months. Dumpsters at Rockville parks are attractively screened and blend into the surrounding environment. To help reduce costs associated with dumpsters, Portland successfully negotiated with its contractor to pay based upon the actual weight of disposed material (as well as the standard haulers fee).

Portland is also considering purchasing 24-yard compactor dumpster units (approximate price = $18,000). The dumpster can compact waste at a rate of 4:1 to 6:1, which will reduce the cost of hauling the same weight/volume of waste. The New York City Parks Department compacts some of its park-user waste and transports the waste in 30-yard containers to the city's disposal facility.

Approach #2: Waste taken directly to a disposal facility.

Transporting park-user waste directly to a disposal facility is the other most commonly used strategy in the 20 sample jurisdictions. This approach generally involves staff transferring park-user waste from trash cans directly to a park-owned trash truck. Staff then empty the contents of the vehicle at a solid waste disposal facility.

Similar to Montgomery County, Frederick County, and the cities of New York and Santa Ana take waste directly to a disposal facility. Baltimore County, Frederick County, and the cities of Virginia Beach and Tulsa integrate approaches #1 and #2. The Baltimore County Parks Department use dumpsters at its large recreational parks and approach #2 for passive and neighborhood parks. Tulsa and Virginia Beach use dumpsters for the majority of parks, and approach #2 for selected neighborhood/local parks. Frederick County staff report that it is more cost efficient to use approach #1 at outlying parks and approach #2 to all other parks.

Tapping into Existing Services. In New York City and the City of Rockville, park managers offset their own in-house service with other city/county waste management services. At select New York parks, staff place park-user waste in bags, which are left on the sidewalk for the City's Department of Sanitation trucks to collect. In Rockville, city-owned trucks are required (when necessary) to collect from selected small parks as part of the residential refuse collection.

In 1997, in response to a need to reduce the cost of park maintenance, Portland's franchised residential haulers volunteered to collect refuse from neighborhood parks free of charge to the city. Today, 14 franchises regularly collect refuse from 124 cans in 47 parks (Source: Solid Waste & Recycling, April 2001 Management report). Portland also requires its local trash haulers to provide coupons valued at $200 annually to community groups for community service projects. Portland's Parks Department is working at partnering with these groups to use their coupons to pay for some of the park-user waste disposal costs. In return, the Department will use the money saved on improving park facilities that the Department could not previously afford.

C. Non-Traditional Approaches

Interviews with other jurisdictions identified two non-traditional approaches to managing park-user waste: carry-in, carry-out parks and using large in-ground containers. Park systems use these non-traditional approaches either alone or in conjunction with traditional approaches #1 and #2.

Approach #3: Carry-in, Carry-out Parks

The carry-in, carry-out concept shifts the burden of removing park-user waste from the jurisdiction to individual visitors. At a carry-in, carry-out park, park-users are required to take their trash with them when they leave. Montgomery County's Department of Parks and Planning is currently piloting the program at six selected parks (see page 20 for further details).

Jurisdictions implement carry-in, carry-out programs primarily as a way to reduce park maintenance costs. Legislative staff identified three state park agencies and one local national park that operate carry-in, carry-out programs that their respective park managers deem "successful." Staff from the other counties and cities that have tried carry-in, carry-out programs report a more mixed experience.

State & Federal Jurisdictions. The majority of state and forest parks in Maryland, Wisconsin, and Delaware do not have trash cans (although trash cans are still provided at campgrounds). State park officials advise that across the U.S., over 50% of state park jurisdictions have implemented a carry-in, carry-out program.

Maryland State Parks and Forests implemented a carry-in, carry-out program in March 1993. Delaware State parks established their carry in, carry out trash free park program in 1994. Staff from Wisconsin's Bureau of Parks & Recreation report that most Wisconsin state park and forest picnic areas, beaches, and other day use areas have had no trash cans since 1996 (trash cans remain at concession stands and campgrounds). The National Park Service's C&O Canal Historic Park instituted a trash free program in the spring of 1999. The program encompasses the entire 184 mile canal, including recreational sections such as picnic grounds, pavilions, concession stands, boat ramps, hiker/biker trails, and camping areas.

Park managers from the state and federal park jurisdictions samples agree that carry-in, carry-out parks:

- Eliminate trash can associated odors;
- Reduce annoying pests and unsightly conditions;
- Reduce the strain on limited park resources and allow for a more productive use of staff; and
- Provide a better overall park experience.

These park managers generally believe that their carry-in, carry-out programs are successful for five reasons:

(1) The majority of their park-users have an environmental stewardship ethic;

(2) Decision-makers and park managers were committed to seeing the program succeed;

(3) The program was implemented after an extensive public education effort;

(4) The program was implemented uniformly throughout the park jurisdiction, i.e., state-wide; and

(5) Educational efforts were reinforced with enforcement on littering.

All state and federal park managers interviewed stated that at the time of implementation, litter increased, and community members and interest groups raised concerns over the impact of the program on the park environment. However, park managers stated that in a relatively short time after implementation, litter decreased to levels lower than before carry-in, carry-out was implemented, and that community members/interest groups are now more supportive of the program. The interviewees all agreed that the majority of park-users enjoy visiting parks and care about a park's condition.

County & City Jurisdictions. Among the counties and cities sampled, only Westchester County and the City of Rockville report successfully sustaining carry-in, carry-out programs. In both places, the carry-in, carry-out programs augment traditional waste management strategies.

In 1998, Westchester County designated five parks (one large 5,000 acre regional park and four smaller parks) as carry-in, carry-out parks. County officials believe that the program's success is due largely to the acceptance of the concept by surrounding residents.

Similar to Westchester County, the City of Rockville implemented a carry-in, carry out program five to six years ago. Since implementation, Rockville staff learned that some parks are better candidates for the program than others. For example, a park containing a ballfield (registered for league use) did not succeed as a carry-in, carry-out park; at that location, staff were continually removing litter (e.g., drink bottles) after ball games and decided to restore the trash cans. However, park managers found that the City's small neighborhood/pocket parks are ideal candidates for the trash free program. City officials claim that neighborhood parks did not receive inordinate amounts of litter and were primarily used by surrounding residents. For the smaller neighborhood parks, City officials have found that the transition to carry-in, carry-out was much smoother and currently limit the program to this category of parks

In Fairfax County, park staff advise that only selected parks containing hiker/biker trails are designated as carry-in, carry-out parks. Park staff have contemplated expanding the program to other categories of parks, but feel that the program would not be as successful and would lack political support.

Discontinued Carry-in, Carry-out Programs. Three Rivers Park District, Howard County, Portland, and Virginia Beach report unsuccessful experiences with carry-in, carry-out. In most cases, the jurisdictions deemed the program a failure within a short period of time because of the sharp rise in complaints about the immediate increase in litter. The complaints came from concerned residents, park managers, and key decision-makers. Interviewees generally agree that their program may have succeeded if piloted for a longer period of time and implemented at carefully selected parks.

In the mid 1990's, Howard County proposed to make all parks as carry-in, carry-out. County officials report that after the public announcement, the County Executive received many complaints from the public. Howard County decided not to implement the strategy and instead reduced the number of trash cans by 50%. The County plans to pilot another waste management strategy in April, 2003 (see page 47 for details).

Similar to Howard County, Portland removed all trash cans from the city's parks several years ago. The program met with a great deal of community resistance (with pressure applied at the political level) and ended after two days. Portland staff believe that the concept may have worked, if the program was phased in at smaller parks where long stays are not expected.

Without success, Hennepin County piloted the carry-in, carry-out strategy at campgrounds. Interviewees claim that the campers were unwilling to store and take home two to three days worth of trash. Staff found that litter increased so much that it became too labor intensive to remove. By contrast, Maryland State parks are entirely carry-in, carry-out, except for campgrounds. State officials determined that the removal of trash cans at campgrounds was not feasible.

Similarly, Virginia Beach also found it too labor intensive to keep up with the litter. Virginia Beach's program was implemented at all 187 of the city's neighborhood parks and discontinued after 12 months. Park managers believe that the carry-in, carry-out program may have succeeded if a better public education program was done prior to implementation. Virginia Beach park staff agree with Portland's summation that the program may work at carefully selected parks.

Approach #4: Large in-ground containers for park-user waste.

The City of Myrtle Beach has installed large in-ground waste receptacles at a third of its parks. These containers can store 500-600 pounds of waste, which is equal to an estimated four peak season weeks of park-user waste. Portland, King County, and Howard are already or about to pilot a similar type of technology in their parks.

The Technology. The eight-foot long containers are constructed out of polyethylene and buried into the ground at a depth of five feet. The internal surface of the container is lined with a 0.25 inch thick disposable plastic bag that is then removed by a mechanize crane attached to a dump or pick-up truck. Park staff do not have to physically lift the bag from the container. The container juts-out three feet above ground and appears as a standard park trash can. According to information provided by the North American provider, the ground keeps the waste cool, which decelerates the rate of decay and allows for extended periods of storage. (The ground keeps waste at approximately 55^0F). The system reduces the frequency of pick-up and according to the provider, achieves substantial savings through reduced collection frequency and operational costs. The provider claims that Finland has used the technology for 10-20 years.

Myrtle Beach's Experience. From time to time, Myrtle Beach experiences hurricanes and gale force winds. To prevent the city's 55-gallon cans and trash from being blown into the ocean, parks staff undertook the labor intensive task of removing trash cans before inclement weather. In an attempt to change this practice, Myrtle Beach piloted four in-ground containers at its beach parks in 1998. In sum, the city found that the pilot was very successful and installed 125 in-ground containers throughout its entire park system.

Over time, Myrtle Beach plans to replace all of its 400 trash cans with large in-ground containers. City officials report that in theory, a large in-ground container can replace up to seven trash cans. However, staff have found that park-users still expect the convenience of a nearby trash receptacle. Therefore, the city is replacing each trash can with a large in-ground container.

In terms of efficiency, officials report that before the containers, it took four people, seven days a week, to empty cans at the city's beach parks. Now only one person is required to empty the in-ground containers. Containers are emptied once every week, month, three months or six months, depending on the level of park usage. According to staff, the containers emit very little to no odor. City officials report that staff enjoy not emptying cans on a daily basis.

Portland's Pilot. According to management staff, Portland's park system once contained over 1,000 trash cans, dispersed over 200 sites, all of which required daily servicing. Over the years, the city's Parks Department has made a concerted effort to reduce the "seldom" used trash cans. Portland staff report that they have reduced the number of trash cans by approximately 25%. However, according to staff, the Department's current approach to managing park-user waste (Portland uses the dumpster approach – see page 40) is still a major component of the parks' maintenance program.

In an attempt to reduce maintenance costs, the Department decided to pilot the large in-ground containers at three neighborhood parks. The Department reports positive results from the pilot and wishes to expand the program by purchasing 20 to 30 containers over the next five years. Staff report that at one of the pilot park sites, staff reduced daily service to a consistent three-week interval. The other pilot park sites now receive waste collection visits at intervals between one to four weeks.

Portland's park managers report that the in-ground containers had initial problems with vandalism, and staff also detected fly-breeding amongst the waste. The vandalism has since slowed down and staff have reduced the fly breeding problem by treating the waste with liquid soap on a weekly basis. Park managers believe that the containers will help them improve park maintenance by reallocating the staff time spent on collecting waste to other functions. Portland sees large in-ground containers as a future integral part of managing park-user waste.

King County's and Howard County's Plans to Pilot . King County has purchased 55 in-ground containers (at a cost of $1,200 each) to install at a 648 acre regional park that receives over three million visitors a year. Similarly, Howard County purchased containers to pilot in a regional park in April 2003. Both King County and Howard County will have park staff empty and dispose of the trash at a solid waste disposal facility. King County park managers plan to evaluate the success of this technology by comparing the labor hours spent collecting and disposing waste from both in-ground containers and standard trash cans.

D. Recycling in Other Park Systems

Table 11, page 48, shows that 10 of the 20 other jurisdictions interviewed recycle commingled material (see page 19 for definition). For these jurisdictions, recycling is commonly provided at large recreational type parks, where visitors are likely to purchase or bring in recyclable material.

For jurisdictions that do not recycle, park managers cite that they do not have the staff resources to operate a successful recycling program. To help address this problem, Orange County and Santa Ana partner with community organizations, such as conservation groups, to manage their recycling programs. Also, New York City's Parks Department collaborates with the City's Department of Sanitation to haul recyclables from designated pick-up locations. New York City Parks staff remain responsible for collecting and bagging recyclables.

Many jurisdictions that do not currently recycle from their parks had piloted recycling programs in the past. Park managers from these places report that recycling initiatives failed mainly because recyclables were contaminated with regular waste. For example, in June 2002, Tulsa City piloted a recycling program at 12 parks. Park management report that, as of early 2003, eight of the 12 parks "failed" the recycling experiment. Management found recycling cans were being used as regular trash cans or were not being used at all. City management believe that the recycling initiative worked better in parks where a strong neighborhood leader partnered with the park manager to make the program succeed. Management also stated the initiative may have failed due to a lack of community education before implementation.

Park managers from state and federal parks believe that because their parks have no trash receptacles, providing containers for recycling cans would defeat the purpose of the carry-in, carry-out trash concept.

TABLE 11: RECYCLING IN OTHER PARK SYSTEMS

Jurisdictions	Recycling Yes/No	Comments
Counties		
Montgomery County, MD	Yes	Recycling at selected parks only
King County, WA	Yes	Part of park maintenance staff duties for regional parks only
Westchester County, NY	Yes	Part of park maintenance staff duties for regional parks only
Greater Vancouver Regional District	Yes	Part of park maintenance staff duties for regional parks only
Baltimore County, MD	No	
Frederick County, MD	No	Recycling initiatives discontinued
Fairfax County, VA	No	
Orange County, CA	No	Only at incorporated cities' parks
Cities		
New York City, NY	Yes	Recycling at 30 recreation centers and 25 neighborhood parks
Tulsa, OK	Yes	Currently piloting a recycling program at 12 parks
Santa Ana, CA	Yes	Recycling at regional parks. Conservation groups collect recyclables.
Portland, OR	No	Recycling initiatives discontinued
Myrtle Beach, SC	No	Currently piloting a recycling program
Virginia Beach, VA	No	Recycling initiatives discontinued
Federal/State		
C&O Canal Historic Park	No	No trash or recycling cans provided
Maryland State Parks	No	No trash or recycling cans provided
Delaware State Parks	No	No trash or recycling cans provided
Wisconsin State Parks	No	No trash or recycling cans provided

Source: Legislative Staff & Interviews with Jurisdictional Park Managers, January 2003

VI. Recommendations

Summary of Recommendations

The Department of Park and Planning places a high value on providing excellent services to County residents. In the context of waste management, the Department strives to place minimal burden on the park-user. Trash cans are conveniently located and frequently emptied, and parks are generally free of litter.

The recommendations in this chapter recognize that fiscal constraints require a change in thinking and practice for both park-users and Department staff. Changing waste management practices can promote the more efficient use of resources while preserving the Department's capacity to maintain well-presented parks and meet the high expectations of park-users.

The Department should:

Recommendation #1: Achieve a balance between customer service and the efficient use of resources by establishing guidelines that employ a variety of efficient waste management strategies; increasing the level of centralized decision-making; and assuming a higher level of responsibility by the park-user and redirecting staff resources toward litter control.

Recommendation #2: Reduce the volume of waste handled by expanding the carry-in, carry-out program to all neighborhood parks, undeveloped parks, conservation areas, and selected local parks, and addressing the prevalence of illegally dumped material.

Recommendation #3: Improve the efficiency of waste management practices by consolidating waste and minimizing the number of trips to the Transfer Station. Options to explore include grouping trash cans, increasing the use of dumpsters, piloting large in-ground containers, and implementing continuous path routing of trash trucks.

Recommendation #4: Enhance existing recycling efforts by focusing on parks/facilities that generate the greatest amount of recyclable waste including administrative buildings and facilities where food and beverages are sold and consumed.

Recommendation #5: Establish a program to monitor and evaluate the different strategies for improving the efficiency of waste collection and disposal practices. In particular, the program should explore the viability of the alternative strategies to manage waste at local parks.

A. Introduction

The Department of Park and Planning places a high value on providing excellent services to County residents. In the context of waste management, the Department strives to place minimal burden on the park-user. Trash cans are conveniently located, frequently emptied, and parks are generally free of litter.

The recommendations in this chapter recognize that fiscal constraints require a change in thinking and practice for both park-users and Department staff. Changing waste management practices can promote the more efficient use of resources while preserving the Department's capacity to maintain well-presented parks and meet the high expectations of park-users.

To help achieve a balance between customer service and the efficient use of resources, Legislative Branch staff propose a model that shifts a portion of the burden for waste removal to park-users and creates a more centralized waste management system that maximizes the use of existing resources and takes advantage of available economies of scale. The model was formed from analysis of park waste data, general industry standards, and information obtained from park managers from 20 other park jurisdictions. Tables 12 & 13 (pages 51 & 52) summarize the proposed model.

In sum, the model and other recommendations presented in this chapter:

- Achieve a balance between customer service and the efficient use of resources;
- Reduce the burden of handling by decreasing the volume of waste;
- Improve the efficiency of waste management practices;
- Enhance existing recycling efforts; and
- Establish a program to monitor and evaluate success.

TABLE 12: MAJOR IBR RECOMMENDATIONS: A MODEL FOR COUNTY PARKS*

	NEIGHBORHOOD PARKS CONSERVATION PARKS UNDEVELOPED PARKS	REGIONAL PARKS RECREATIONAL PARKS	LOCAL PARKS
Carry-In/ Carry-Out[1]	**Implement** in latter half of FY 04 following a six month education period.	**Defer** decision until data is evaluated from alternative waste management practices implemented in neighborhood and local parks.	**Pilot** a carry-in/carry-out program in at least six local parks that produce small amounts of trash.
On-Site Waste Consolidation	**Continue** to have Department staff clean ground litter.	**Relocate trash cans** to places where they can more easily be emptied. **Consider** alternative trash can types such as **in-ground receptacles.** **Dispose** trash **in contract dumpsters** or identify other means of reducing costs through consolidation of trash.	**Relocate trash cans** to places where they can more easily be emptied. **Consider** alternative trash can types such as **in-ground receptacles.** **Place dumpsters** in at least two parks in each maintenance area.
Off-Site Waste Transport	**Transport** collected litter **to nearest dumpster**.	**Contract** for transport and disposal of trash or identify other means of reducing costs through reduction of trips to the Transfer Station.	**Transport** collected litter **to nearest dumpster location** or Employ alternative collection methods such as centralized **continuous path routing**.
Recycling	**Do not provide recycling** in carry-in/carry-out parks.	**Provide recycling** containers at high usage areas where food and beverages are sold or consumed.	**Selectively provide recycling** containers at high usage areas where food and beverages are consumed.

*** URBAN PARKS recommendation:** Explore having waste management performed by Urban District contractors.

[1] Current carry-in/carry-out and recycling pilots should continue in all parks until the test period concludes and evaluation is completed.

TABLE 13: MAJOR IBR RECOMMENDATIONS: A MODEL FOR OTHER DEPARTMENT FACILITIES

CENTRAL MAINTENANCE and NATURAL RESOURCES	➢ Maximize the use of dumpsters for non-bulky waste. ➢ Transfer bulky waste to intermediate transfer points (e.g. roll-off dumpsters) where it can be stored until there is sufficient quantity to justify a trip to the transfer station. ➢ Provide recycling as required by the County Code and Executive Regulation.
ENTERPRISE FACILITIES	➢ Continue to use contract dumpsters; evaluate the need for the amount of dumpster capacity and frequency of collection on a periodic basis. ➢ Provide recycling where food is sold or consumed in large quantities. ➢ Set user fees to fully cover the cost of waste management, including recycling.
ADMINISTRATIVE OFFICES	➢ Continue to use contract dumpsters at Parkside and Saddlebrook and add a contract dumpster at the MRO building; Dispose trash from small offices at on-site contract dumpster or transport to a nearby contract dumpster. ➢ Provide recycling as required by the County Code and Executive Regulation. Continue existing recycling efforts at small offices and evaluate opportunities to expand the program to other offices.

Recommendation #1: Achieve a balance between customer service and the efficient use of resources by:

a) **Establishing guidelines that employ a variety of efficient waste management strategies;**

b) **Increasing the level of centralized decision-making; and**

c) **Assuming a higher level of responsibility by the park-user and redirecting staff resources toward litter control.**

Employing a variety of strategies consistent with established guidelines for efficient waste management. The Department should establish guidelines and procedures to ensure that park managers have sufficient information about appropriate strategies for collecting and disposing waste. Since the Department's orientation has been to focus on customer service, park managers need information to help them determine how to best shift that focus while maintaining standards for clean and attractive parks.

The guidelines should take into consideration the:

- Type and size of park;
- Level of use;
- Mix of recreational activities;
- Amount of trash generated;
- Location in relation to the transfer station; and
- Susceptibility to illegally dumped material.

The guidelines should include information on options for disposing of different forms of trash including compactable, non-compactable and/or bulky items, and recyclable waste. The guidelines should also detail the pricing of different disposal options to avoid unnecessary tipping fees.

Increasing the level of centralized decision-making. While park managers should continue to have discretion to make certain decisions independently (or to vary from policy in unique circumstances), the Department needs to increase the level of centralized decision-making on waste management practices. Currently, each of the nine park managers independently decides how to remove trash, frequently not taking advantage of the available economies of scale. Routing of trash trucks and negotiating dumpster contracts are two examples of activities that could be performed far more efficiently on a centralized basis. To facilitate centralization, the Department should consider assigning the responsibility of coordinating waste management strategies (including recycling) preferably to one person within the organization or alternatively one person per division.

Assuming a higher level of responsibility by the park-user and redirecting staff resources toward litter control. Improving efficiency must involve shifting some portion of the burden for waste removal to park-users. This step will reduce the strain on limited resources and will allow the Department to redirect staff resources toward other maintenance activities. Removing trash cans or having them less easily accessible is likely to increase litter in the short term and the Department will need to shift resources from emptying trash cans to litter control.

Staff believe that this is an appropriate step, but one which may generate complaints in the short-term and will require a shift in policies and goals in the Department. Recommendation #3 (page 58) suggests ways to shift a portion of waste removal to park-users.

Recommendation #2: Reduce the volume of handled waste by:

a) **Expanding the carry-in, carry-out program in FY 04 to all neighborhood parks, undeveloped parks, conservation areas, and selected local parks; and continue existing pilots; and**

b) **Addressing the prevalence of illegally dumped material.**

(a) Expanding the carry-in, carry-out program in FY 04 to all neighborhood parks, stream valley parks, conservation areas, and selected local, urban, and recreational parks. Carry-in, carry-out programs shift the burden of removing park-user waste from the jurisdiction to individual visitors.[2] At a carry-in, carry-out park, park-users are required to take their trash with them when they leave. Montgomery County's Department of Park and Planning is currently piloting the program at six selected parks (see page 20 for details).

Legislative staff recommend that the Department expand the existing carry-in, carry-out pilot because:

1. Based upon the experience in other jurisdictions, carry-in, carry-out programs reduce park maintenance costs and/or allow for more productive use of staff time. Staff believe that the savings from not emptying trash cans will more than adequately offset the costs of removing additional litter. Staff estimate that a carry-in, carry-out program may reduce costs by a net amount of at least $100,000 to $350,000 per year once fully operational (see © 57 for details).

2. The Department of Park and Planning should do all it can to foster an environmental stewardship ethic regarding the use and care of parks.

3. The program eliminates trash can associated odors, reduces annoying pests and unsightly conditions, and improves overall park appearance.

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[2] The term trash-free conjures an unrealistic image of park devoid of trash. Legislative staff learned that the phrase "carry-in, carry-out" is a more fitting description of the approach.

4. There is an emerging willingness and commitment among park managers to expand the program and to see it succeed. Park managers express optimism about the program's success, but would like to reserve final judgment until after summer, when parks receive peak usage.

5. Montgomery County residents are already familiar with other carry-in, carry-out programs operated successfully in the C&O Canal Historic National Park, in all state parks (including Seneca Creek State Park), and selected parks in the City of Rockville. Also, M-NCPPC's existing policy for general facility and field use requires that permit holders "carry-out" their trash.[3]

Implementation Options

One of the fundamental decisions is whether the entire park system should participate in a carry-in, carry-out program or whether to phase-in the program at selected parks. The benefits of converting the entire system include the ability to conduct a single comprehensive educational effort and the potential for greater immediate savings. System-wide implementation, however, also increases the potential for non-compliance, complaints, and public pressure to return trash cans to the parks. Several years ago, Portland removed all trash cans from the city's parks at one time. The program met with a great deal of community resistance (with pressure applied at the political level) and lasted only two days. Portland staff believe that the program might have worked, if phased in at smaller parks where long stays are not expected.

Legislative staff believe that a phased-in program, implemented first at the parks where it is most likely to succeed and where the costs of trash collection are high, will create a positive environment for future expansion of the program. Legislative staff recommend that the program be introduced at parks that generate the least amount of trash and where use is limited and/or the local communities are the primary users. The Department should establish a mechanism for evaluating the advantages and disadvantages during implementation, which can then be used to determine how best to expand the program over time.

Strategies to Facilitate Success

Based upon the experience of other jurisdictions, the Department should implement the following five strategies to facilitate the success of an expanded carry-in, carry-out program:

- Commit to the objective;
- Conduct an extensive and lengthy public education effort, before implementation;
- Select the most appropriate parks;
- Reinforce education efforts with enforcement on littering; and
- Monitor and evaluate success of the program.

[3] The policy is not implemented – see page 22 for further details.

Committing to the Objective

Councilmembers, Planning Board members, and Parks staff should expect, and be prepared for, complaints during the first year following the conversion to a carry-in, carry-out program. While an initial increase in littering is to be expected; other park systems experienced a decrease in littering after a 6-12 month adjustment period, sometimes to less than experienced with trash cans.

The Department should ensure that senior staff, park managers, and maintenance staff are committed to seeing the program succeed. Also, the Department should seek support from Planning Board and County Council members. All parties should agree not to return trash cans to a park until after an agreed-upon evaluation period that allows residents to adjust to the change.

Conducting an extensive and lengthy public education effort

The Department should create an enhanced educational program to publicize the benefits of carry-in, carry-out parks. The information should be made widely available, tailoring the effort to different populations that use different parks. Staff recommend beginning an educational/publicity effort immediately and removing trash cans from sites during the winter of 2003-2004. Signs should be placed at entrances to every park and at heavily used facilities that formerly had nearby trash cans (such as ballfields).

The Department should also recognize that demographic characteristics such as average educational level appear to impact the degree to which residents participate in programs designed to minimize trash collection (such as recycling programs or carry-in, carry-out parks). The Department should consult with the Department of Public Works and Transportation to identify how demographics are likely to impact the success of the effort and what education strategies can be used to increase participation.

Carefully select the parks

The first phase of Park and Planning's carry-in, carry-out program should include neighborhood parks, undeveloped parks, conservation areas, and at least six selected local parks. (The Department should decide on a case by case basis whether special and miscellaneous parks are appropriate for the carry-in, carry-out program.) The Department should select those local parks which are most likely to have success with a carry-in, carry-out program applying such criteria as volume of visitors and waste, lack of prior problems with waste removal, and likely participation of the surrounding community.

The cost of collecting trash at dispersed smaller parks (e.g., neighborhood parks) that do not generate a significant amount of trash is much greater per can than the larger centrally located regional/local parks. Dispersed smaller parks require park staff to travel significant distances to collect a small amount of waste. Neighborhood parks not only generate a small amount of waste, but also tend to be visited primarily by residents of adjacent communities. As such, these

visitors are generally more concerned about the appearance of their neighborhood park than those who travel outside their own neighborhood use the facilities (e.g., ballfields) offered at larger regional/recreational and local parks. Staff also recommends that Department continue the carry-in, carry-out program at existing pilot sites until the pilot's success is fully evaluated.

Staff recommend that parks containing ballfields not be included in the first phase of expansion. Staff recognize that there will be additional challenges at parks that have ballfields, but believe that the challenges are not insurmountable. For carry-in, carry-out to succeed at parks with ballfields, there must be a significant effort to educate league and teams on the need to remove trash, as well as penalties enforced for those who fail to comply. This may even require some monitoring of fields in the short term with penalties swiftly applied for those who leave trash (e.g., a warning or monetary penalty for the first offense and removal of the permit for the rest of the season for the second offense).

Legislative staff recommend continuing to provide waste removal at regional and recreational parks for the indefinite future or until data collected from neighborhood and local park efforts indicate that they would be appropriate candidates for a carry-in, carry-out program. It is far more efficient to collect waste at regional and recreational parks which have a large volume of waste concentrated in one area. Since many of the parks present significant opportunities for recycling, there is an advantage in providing trash and recycling receptacles in these parks which may not be present in smaller parks where recycling may not be viable. Unless the Department concludes that the carry-in, carry-out pilots currently being implemented at recreational parks are not succeeding, they should continue those pilots until further evaluation is completed.

Staff also recommends that the Department:

- Provide park managers with the discretion to exclude a limited number of parks from the carry-in, carry-out program in unique cases.

- Consider which (if any) carry-in, carry-out parks should have bags that visitors can use to remove trash. The Department may want to evaluate what affect the presence of bags has on the amount of litter generated.

- Give special consideration to parks adjacent to other facilities with trash receptacles (e.g., schools) since the park-user may deposit their trash there if the park no longer has trash cans. The adjacent facility may need to secure their trash receptacles (e.g., lock dumpsters), Park and Planning could continue to provide trash pick-up at parks adjacent to other public uses, or the Department could reimburse the adjacent party for the additional trash they receive once the park becomes carry-in, carry-out.

Enforcement

The Department should develop strategies for monitoring compliance and enforcement – particularly when teams and leagues that receive permits do not comply. Other jurisdictions find enforcing with warnings and/or revocation of permits effective. This may mean dedicating additional resources to enforcement during the early stages of the program.

Monitor and evaluate success

The Department should monitor and evaluate the success of the program to determine:

1. When and where expansion of the program is appropriate;
2. What types of parks succeed best with carry-in, carry-out programs;
3. Strategies to minimize littering;
4. Whether all carry-in, carry-out parks should provide bags; and
5. Costs and benefits of the program.

(b) Addressing the prevalence of illegally dumped material. Park managers report that a significant portion of the waste transported by non-trash trucks may be waste dumped illegally in parks. To address this issue, staff recommend that the Department:

- Survey park managers to determine whether there are specific parks or type of parks most likely to experience illegal dumping. This information should help the Department develop targeted strategies to address the problem;

- Promote through signage and other means the use of Damascus and Poolesville County Highway Services Depots for disposing of bulky material;

- Meet with County Department of Environmental Protection staff responsible for illegal dumping outside parks to see where opportunities for cooperation or information sharing exist; and

- Design educational and enforcement strategies to address this problem.

Recommendation #3: Improve the efficiency of waste management practices by consolidating waste and minimizing the number of trips to the transfer station.

For those parks that do not participate in a carry-in, carry-out program, the Department should consider ways to reduce the cost of waste collection by minimizing the time spent collecting and transporting waste. This can be accomplished by consolidating waste before removing it off-site and minimizing the number of trips to the transfer stations. Specific options to explore are outlined below.

A. On-site Waste Consolidation

On-site waste consolidation leads to the collection of a significant volume of waste at a park, before removing the waste off-site. Dumpsters and possibly in-ground containers are best suited for consolidating waste on-site.

Reduce the number of trash cans or group trash cans closer to the road/access ways to facilitate more efficient refuse collection. Many parks have numerous trash cans, located where park-users can easily reach them. Reducing the number of cans, or placing them along roads or easy pick-up locations could reduce the amount of time spend collecting trash within a park. Staff note that some park managers already group cans closer to the road to facilitate more efficient refuse collection.

Continue to have park staff responsible for on-site collection. Park managers note the amount of pride area staff feel for the parks they maintain, making those staff the best option for collecting trash in a park. While in the park collecting waste they have the ability to assess the general park conditions, take note of issues that need to be addressed (e.g., graffiti or a facility in disrepair) and have the incentive to do more than simply pick up the trash. For this reason they believe that area staff (as opposed to a trash crew responsible for all parks) best serve the parks in that area. Staff agree and believe that area staff should be responsible for cleaning up trash within a park. However, Staff do not believe that park area staff need also be responsible for transporting that waste to the transfer station as discussed below.

Maximize the existing dumpster capacity and expand the use of dumpsters at all types of facilities including maintenance yards, enterprise facilities, administrative offices, and selected parks. Dumpsters are currently located at 13 (out of 20) enterprise facilities, six maintenance yards, selected recreational parks, and three administrative buildings (excluding MRO). The data collected and analyzed for this report show that these dumpsters are under utilized. Nonetheless, each ton of waste transported by contractor from a dumpster costs three to four times less to dispose of than each ton transported by park staff to the transfer station.

Staff estimate that expanding the use of dumpsters at those parks not participating in the carry-in, carry-out program, all administrative offices, and at all Central Maintenance and Natural Resources Division facilities may save the Department at least $100,000 to $200,000 (see © 57 for details). Based on the potential cost savings, staff believe that the Department should explore greater use of existing dumpsters, and the placement of additional dumpsters at all **administrative offices, maintenance yards, enterprise facilities**, and parks with high levels of waste, e.g., regional, recreational, and local parks. (See page 63 for further recommendations on local parks that do not generate large amounts of trash.)

This system of dumpsters and roll-off dumpsters (used for bulky non-compactable waste) can be incorporated into a web of dumpsters geographically dispersed throughout the County. Dumpsters can serve multiple parks, receiving not only park-user waste, but also material currently being delivered to the transfer station in non-trash trucks. The Department should follow the model of other jurisdictions, which have found ways to attractively screen dumpsters in parks and secure the facilities to prevent illegal dumping. (See page 41 for details).

In terms of **administrative buildings**, the universal practice for waste management of large offices is to have dumpsters on-site that are emptied as needed by contractors. This practice is considered to be efficient and cost effective. At MRO, a trash crew collects the office's waste

from the curbside, which is placed by custodial staff Monday through Saturday. Staff recommend that the Department immediately explore options for placing a trash dumpster on-site at the MRO building and contracting to have waste removed. There are numerous small Park and Planning Department offices throughout the County. Staff recommend that these offices either use on-site dumpsters or arrange to have trash transported to the nearest dumpster.

At sites with dumpsters, the Department should periodically review usage to be sure the size of dumpster and frequency of pick-up is appropriate for the amount of waste collected. (Park and Planning facilities that currently have dumpsters use, on average, only 25% of capacity; less frequent collections would reduce costs.) Also, to reduce the widely differing prices for the removal waste contained in dumpster, the Department should seek bids that cover large areas (or perhaps the entire park system) to take advantage of economies of scale.

In addition, this report identified significant cost advantages to utilizing contractors to haul waste from a park/facility. Staff note that prior efforts to obtain bids for trash removal failed because the Department required the contractor to collect directly from cans, a function that the waste contractors are not well equipped to perform. Staff believe that park staff should be responsible for transporting waste from cans to a dumpster and that contractors can be used to transport the waste from the park. Expanding the use of contractors to haul waste will allow Department to change existing staffing patterns to focus on on-site waste activities. See recommendation #3 for further details.

Pilot and evaluate the installation of large in-ground containers at parks that receive high levels of waste. The Department should consider piloting alternative trash receptacles such as the large in-ground containers used by Myrtle Beach, South Carolina, Howard County, Maryland and Portland Oregon. These in-ground receptacles hold a far greater amount of waste, significantly reduce the frequency of collections. (See pages 45-47 for further details).

B. Off-site Waste Transport

Removal and off-site waste transportation includes the modes of transporting waste from a receptacle to a disposal facility. The Department primarily transports waste off-site using a combination of trash trucks and non-trash trucks. The Department uses a contractor to also transport a small amount of waste.

Reduce the number of light loads made by non-trash trucks to the transfer station. In 2002, staff found that Northern and Southern Division non-trash trucks frequently delivered relatively light loads to the transfer station. The Department should focus on limiting (or eliminating) the number of these trips.

Once the system of dumpsters is established, waste collected by non-trash trucks could be taken to dumpsters at local transfer points such as regional & recreational parks and/or maintenance facilities. Non-bulky solid waste (typical park, homeowner or commercial waste) should be taken to the nearest dumpster. Putrescible (likely to rot quickly) waste should be taken to the closest dumpster with a pick-up in the next 2-3 days – or to the transfer station if it is closer.

Bulky waste that cannot be compacted (mattresses, refrigerators, engines etc.) should be taken to a transfer point where similar waste can be held until there is a sufficient quantity to justify a trip to the transfer station. The Department should identify transfer points for this type of waste at maintenance facilities or other similar areas.

Implement a centralized system to route trash trucks across the Maintenance Areas so that trucks are filled near or to capacity before traveling to the transfer station. If the Department chooses to transport some portion of its waste instead of relying entirely on contractors it should ensure that trash trucks visit the transfer station near or to full capacity. Staff believe that the reasons why a trash truck currently visits the transfer station under capacity is generally because (1) the size of the collection area does not generate a full load of waste; and (2) due to sanitary reason, trash cannot be stored on board more than two to three days before tipping.

To overcome these obstacles the Department should explore using a private sector practice called "continuous path routing." Under this system, trash trucks follow a segment of a continuous designated route. A central person who oversees the process calculates different start and end points for each trash truck along the path. The start and end times of each truck is determined by the capacity of the vehicle rather than the time of day or number of sites visited. In sum, trucks leave the route and visit the transfer station when capacity is reached.

Centralized continuous path routing means that trash trucks would have to travel beyond their existing maintenance boundaries. Staff note that a version of this concept occurs between Wheaton and Meadowbrook maintenance areas, but it should be expanded and implemented system-wide.

Re-evaluate the fees charged to the Department of Recreation and consider joint procurements with other public agencies. The Department's Memorandum of Understanding with the County's Department of Recreation requires park staff to collect waste from seven aquatic centers, 16 community centers, and six sports fields. Based on current practices, staff believe that the fees charged to the Department of Recreation cover less than half of the actual costs. The Department of Park and Planning should adjust the fees to reflect actual cost of services provided. (The Department of Recreation is likely to find that using an on-site dumpster will be less expensive than paying the full cost to the Department of Park and Planning.)

The Department should also consider whether there are opportunities to have joint procurements with other agencies, such as the Montgomery County Public Schools or the County Government. It may be far more economical to have those parks served by the adjacent facility owner (e.g., to use a school dumpster and reimburse the school system for any additional costs) or to jointly contract for services than to have M-NCPPC serve the park itself. The Department should also explore having all parks located within urban districts served by the District's contractors.

Recommendation #4: Enhance existing recycling efforts by focusing on parks/facilities that generate the greatest amount of recyclable waste including administrative buildings and facilities where food and beverages are sold and consumed.

In early 2002, the Department released a study, *M-NCPPC Recycling: Findings and Options,* that contained nine recommendations to improve the agency's recycling performance. Legislative staff concur with the strategies in the Department's report and offer additional suggestions.

The Department should enhance recycling efforts by focusing on the greatest targets of opportunity. Specifically, this means the three office locations (MRO, Parkside and Saddlebrook) and regional and recreational parks and enterprise facilities where food or beverages are sold or consumed.

The Department should recycle at administrative offices as required by Section 48 of the County Code and Executive Regulation 109-92AM that mandates recycling in the non-residential sector. The Department should continue existing recycling efforts at small offices and evaluate opportunities to expand the program to other offices. Those offices exempt from legal requirements for recycling may have too small a volume of recyclable material to justify the cost of collection.

Where recycling is provided, prevent commingling of trash and recyclable materials by using appropriate receptacles, properly labeling those receptacles, and placing recycling receptacles directly adjacent to other waste cans. Staff should use on or off-site transfer points to aggregate recycled material until there is sufficient volume to justify a trip to the Recycling Center.

Once those facilities are adequately served, the Department should evaluate whether there are opportunities for recycling at other parks, such as local parks. This will depend on the long-term waste collection strategy selected for local parks. Those local parks which currently have recycling on a pilot basis should continue recycling until they have had adequate time to evaluate the success of the pilot. Staff note that the Little Bennett Area has implemented a recycling program at all parks.

The Department should not provide recycling containers at carry-in, carry-out parks. If recycling receptacles are provided without trash cans, recycling cans would be a magnet for regular trash. Moreover, the cost of providing recycling at these parks will most likely not justify the result for the same reasons it is inefficient to collect waste from the smaller, less utilized parks. Further, a low volume of recyclable materials may not justify the cost of collection.

Finally, the Department should monitor the amount of waste diverted from dumpsters to recycling and decrease the size of dumpsters or frequency of collection accordingly. Park and Planning Department Staff have expressed concern about the cost of providing a recycling program. The increase cost for recycling should offset the decrease in cost for trash collection.

Recommendation #5: Establish a program to monitor and evaluate the different strategies for improving the efficiency of waste collection and disposal practices. In particular, the program should explore the viability of the alternative strategies to manage waste at local parks.

Monitor and Evaluate Success. The Department should use the next two years to evaluate the different strategies for improving the efficiency of waste collection and disposal practices; with a goal of finalizing a strategy for waste management in three years. For example, the Department should determine whether the carry-in, carry-out program should include all parks. If not, the Department should determine the most appropriate strategy(s) for managing waste at any given park/facility. Also, the Department should assess whether new waste management strategies change the need for existing fleet of trash trucks.

The Department should work with the Office of Legislative Oversight (OLO) to prepare an evaluation plan to determine how the carry-in, carry-out effort and other newly introduced waste management strategies will be monitored and evaluated over time.

In addition, staff recommend that the Park and Planning Department report back to the Planning, Housing, and Economic Development (PHED) Committee twice a year while they are testing and evaluating the different strategies for improving the efficiency of waste collection and disposal practices.

Local Parks. This report recommends specific strategies for waste collection at parks that generate the greatest (e.g., regional/recreation parks) and least (e.g., undeveloped/neighborhood parks) amount of trash. For local parks, staff believe that a number of different strategies should be tested to determine a long-term strategy while reducing costs in the short-term. Monitoring and evaluation over the next one to two years will be critical to make this determination.

Local parks do not have the level of use or volume of waste as regional or recreational parks but their facilities, particularly ballfields, tend to attract users from a broader area and generate a greater amount of trash than neighborhood parks. There are a range of strategies which could increase the efficiency of trash removal at local parks including carry-in, carry-out or mechanisms to reduce collection time and centralize collection such as dumpsters or in-ground facilities.

Staff believe that the Department of Park and Planning must change its current practice so that within the next 3 years each local park (1) becomes carry-in, carry-out, (2) has underground trash receptacles, (3) has a dumpster on site or at a nearby facility, (4) uses continuous routing to insure that trash truck are filled to capacity before traveling to the transfer station, or (5) has some other way of significantly decreasing the cost of collection not identified in this report. The option staff recommends at this time is for the Department to test a combination of several of these options at different local parks over the next year and evaluate their success.

Montgomery County Park System
(Report Number 30)

	Developed	Undeveloped	Total Parks	Acres Undeveloped	Acres Developed	Total Acres	SB Fld	BB Fld	FS Ovrly	FS Fld	Play Field	Playground	Bball Mu Ct	Ltd Bball	Tennis Ct	Ltd Tennis	Gazebo	Picnic Area	Open Shelter	Rec Bldg
County-wide Parks																				
Stream Valley Park Units	1	33	34	12,728.1993	71.9270	12,800.1263	1	0	1	3	0	12	1	0	0	2	0	1	0	0
Regional Park	5	0	5	5,221.4180	2,610.7090	7,832.1270	9	3	1	0	0	16	0	2	0	21	0	12	44	0
Recreational Park	7	4	11	466.3650	2,488.3687	2,954.7337	12	7	2	12	0	9	6	4	9	22	0	4	5	0
Conservation Park	0	15	15	3,189.4945	0.0000	3,189.4945	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Special Park	15	3	18	920.6553	853.7887	1,774.4440	1	0	0	0	1	2	0	0	0	0	1	4	5	2
Misc. Recreation Facility	2	0	2	0.0000	4.1589	4.1589	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Misc. Non-recreation Facility	4	0	4	0.0000	106.2029	106.2029	1	0	0	0	0	1	1	0	0	0	0	0	0	0
SUBTOTAL	34	55	89	22,526.1321	6,135.1552	28,661.2873	24	10	4	15	1	41	8	6	9	45	1	21	54	3
Community Use Parks																				
Urban Park	20	2	22	0.6643	23.4124	24.0767	0	0	0	0	0	14	2	1	3	1	7	7	2	0
Neighborhood Park	81	12	93	77.5657	554.1076	631.6733	5	0	3	7	3	84	50	9	46	11	2	29	15	4
Local Park	128	13	141	194.3045	1,871.4881	2,065.7926	137	10	58	71	2	131	92.5	37	119	64	2	70	32	27
Neighborhood Conservation Area	0	40	40	281.6376	0.0000	281.6376	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	229	67	296	554.1721	2,449.0081	3,003.1802	142	10	61	78	5	229	144.5	47	168	49	11	106	49	31
GRAND TOTAL	263	122	385	23,080.3042	8,584.1633	31,664.4675	166	20	65	93	6	270	152.5	53	177	121	12	127	103	34

(7)

Attachment 1

M-NCPPC RECYCLING: FINDINGS AND OPTIONS

Department of Park & Planning

Montgomery County, Maryland

Prepared by:

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January 11, 2002

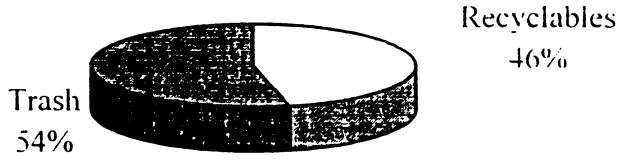
EXECUTIVE SUMMARY

In May 2001, the Montgomery County Council requested the Maryland-National Capital Park & Planning Commission (M-NCPPC) to assess its recycling operations and to identify means to improve recycling efforts throughout the Department of Park and Planning. Two factors are responsible for this request. First, the County Council desires that solid waste generated in the county be recycled to the greatest extent possible. The second is to improve efficiency and potentially reduce solid waste disposal costs.

In Montgomery County, the *Comprehensive Solid Waste Management Plan for the Years 1988 through 2007* establishes a **countywide** goal to achieve and maintain a 50 percent recycling rate by December 2004.[1] This goal does not apply to any specific type of facility, company, organization, or sector. It is a countywide goal.

Based on an assessment of operations conducted in fall of 2001, it is estimated that approximately 46 percent of the solid waste generated within M-NCPPC facilities was recycled. However, composting and reuse of woody material comprises 36 percent of the material recycled and only 10 percent is paper, and plastics, aluminum and metal.

Percent of Solid Waste Recycled and Disposed as Trash



[1] Department of Public Works and Transportation, Division of Solid Waste Services. *Comprehensive Solid Waste Management Plan for the Years 1998 through 2007*, as amended 2001.

Reasons why the paper, glass, plastic and aluminum recycling rate is low includes but not limited to the following:

- Senior management has not mandated recycling as a top priority for all M-NPPC activities and employees.
- Lack of opportunities for employees and patrons to recycle.
- Lack of education and training for employees on how to recycle and the need to keep the materials segregated from regular trash.
- Lack of equipment, space, containers and separate transportation to ensure segregation of the materials.
- Lack of staff, or a designated recycling coordinator to assist and direct staff in recycling activities.
- Lack of adequate record keeping.

Program deficiencies can be overcome by changes and approaches to the current M-NCPPC recycling efforts. Possible changes include, but are not limited to:

- Senior management should mandate all employees to recycle and direct staff to support and expand recycling efforts.
- M-NCPPC should develop a policy to *Recycle, Reduce & Reuse* materials. The Planning Board should adopt this Policy.
- Establish a budget to expand recycling program to enable suggestion implementation.
- Retain a recycling coordinator, above SAG, to implement and improve on the recycling program, and to:
    - Work with available resources from the United States Environmental Protection Agency's Waste Wise Program and the Maryland Department of the Environment's Commercial Recycling Assistance Program.
    - Investigate other collection programs to identify efficient means of collection, routing, needed equipment, and changes necessary.

- Recommend practical recycling options based on existing conditions, budget constraints and sound research and experience.
- Develop an efficient collection system
  - Work to design a program tailored to the needs of each building and facility.
  - Size recycling containers according to maximum need.
  - All recycling containers must be a uniform color with the international recycling symbol and bilingual.
  - Design or select uniform colors and style recycling containers.
  - Design symbols and text to be placed on all recycling containers.
- Design and implement a recycling education program for employees and patrons.
- Design or obtain educational brochures, literature, and signage to be used for training staff and informing patrons.
- Establish, coordinate and direct a new recycling committee.
- Develop a tracking system to record recyclables that are currently overlooked.
- Install additional recycling containers according to the needs of each site.
- Determine additional pick-up locations for the expansion of recyclable collection points serviced by Waste Management Incorporated (WMI).
- Work with PG-M-NCPPC to coordinate their recycling efforts with MC-M-NCPPC.
- Complete M-NCPPC's analysis of the refuse collection process.
- Monitor and report annual successes and failures, and progress toward achieving a 50 percent recycling goal.

- Maintenance managers must find ways for staff to transport recycling material to storage areas until ready for pick-up by WMI or delivery to recycling centers.
- Begin a "Recycling Improvement & Policy Changes" column in the Update.

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M-NCPPC RECYCLING: FINDINGS AND OPTIONS

I. INTRODUCTION: PROJECT BACKGROUND

In May 2001, the Montgomery County Council requested the Maryland-National Capital Park & Planning Commission (M-NCPPC) to assess its recycling operations and to identify means to improve recycling efforts throughout the Department of Park and Planning. Two factors are responsible for this request. First, the County Council desires that solid waste generated in the County be recycled to the greatest extent possible. The second is to improve efficiency and potentially reduce solid waste disposal costs.

Assessing the recycling operations throughout the 30,000-acre M-NCPPC system is complex. The system includes numerous office buildings, nature centers, gardens, passive and active recreational areas, picnic areas, campgrounds, recreational buildings, golf courses, tennis centers, equestrian centers, skating rinks, vehicle maintenance yards, and miles of bicycle, equestrian, and foot paths. If each building or activity were separate businesses, it would have to conduct individual assessments, develop options, and recommend/make improvements for each business. Because of the complexity of M-NCPPC, an assessment of each facility was not possible; however, because of the similar nature of the operations for many facilities it was not necessary. **The purpose of this report is to assess current operations and develop recommendations.**

II. REGULATORY REQUIREMENTS & COUNTY WIDE GOALS

The 1988 Maryland Recycling Act mandates local governments in Maryland to recycle a minimum of 20 percent of the solid waste generated within each county.[2] In Montgomery County, Executive Regulation 109-92, "Solid Waste and Recycling", requires households and businesses to recycle mixed paper, containers, and yard waste. The regulation classifies the M-NCPPC as a business establishment. Therefore, M-NCPPC must comply with the regulatory requirements for businesses.

[2] See Annotated Code of Maryland, Environment Article, Section 9-1703.

In general, the regulation requires M-NCPPC to:

- Develop a recycling program.
- Describe waste reduction and recycling methods.
- Submit an annual recycling and waste reduction report to the county.

M-NCPPC has complied with the requirements of the recycling regulation, but little or no improvement in the percentage of material recycled has occurred.

In Montgomery County, the *Comprehensive Solid Waste Management Plan for the Years 1988 through 2007* establishes a **countywide** goal to achieve and maintain a 50 percent recycling rate by December 2004.[3] This goal does not apply to any specific type of facility, company, organization, or sector. It is a countywide goal.

III. EXISTING CONDITIONS

Virtually, all M-NCPPC facilities generate refuse and recyclable materials. The materials are generated, purchased, or brought into a M-NCPPC facility for use or consumption. The collection and disposal of these materials at the various facilities differs. In order to understand the existing conditions at various facilities, Park Managers completed a survey (see Appendix D, Recycling Survey) that identified the types of materials recycled at their facilities. The survey identified transportation, staff, containers, and financial impediments to recycling. The survey also identified strengths and weakness within the Commission's existing recycling program.

In order to estimate the percentage of material recycled, the amount of solid waste material generated must be known. This is necessary because the percentage of material recycled is dependent on the total amount of solid waste material generated. Solid waste includes all waste materials and debris, dead and felled trees, tree limbs, bush, plant, leaves, grass, garden trimmings, street refuse, bottles, cans, waste paper, cardboard, and any other waste materials. Solid waste also includes vehicles, containers, tires, appliances, furniture, or recreational

[3] Department of Public Works and Transportation, Division of Solid Waste Services. *Comprehensive Solid Waste Management Plan for the Years 1998 through 2007*, as amended 2001.

equipment that is in a state of disrepair. The following sections discuss trash/refuse collection, recyclable material collection and reuse, what some facilities are recycling, and the current rate of recycling.

a. Refuse/Trash Collection

All M-NCPPC facilities generate trash or refuse. Trash is generated through the day-to-day activities of M-NCPPC employees, by customers utilizing M-NCPPC facilities, or by illegal dumping.[4] Trash is collected and disposed by either M-NCPPC staff or by Waste Management Incorporated (WMI), a private vendor. WMI collects and disposes of trash from 17 facilities at designated sites. M-NCPPC staff collects the trash from all the remaining facilities and disposes it at the Montgomery County transfer station.

M-NCPPC utilizes five trash compactor trucks in the Southern region and five trash compactor trucks in the Northern region. Trash is collected from numerous facilities, or trash locations, before the truck is driven to the transfer station for disposal, making it nearly impossible to determine the amount of trash collected at a specific facility. Trash is loaded onto the trash truck by staff dumping the containers directly into the back of the truck. In some locations, the truck can drive next to the trash containers for emptying. In other locations, staff must walk to remote trash containers and carry the trash to the truck for disposal. The need or desire to place trashcans in remote areas of parks makes it impossible for staff to utilize heavy equipment for the removal of all refuse.

From November 1, 2000 to October 31, 2001, M-NCPPC disposed approximately 940 tons of trash at the Shady Grove transfer station. M-NCPPC is charged $44 for each ton of trash dumped on the transfer station floor. Meanwhile WMI collected and disposed approximately 396 tons of trash from 17 facilities. Therefore, the total amount of trash collected and disposed is approximately 1,336 tons per year. Exhibit 1 indicates the amount of trash collected at all M-NCPPC facilities.

[4] In some parks, Park Managers estimate that 50 percent of the trash collected is illegally dumped household trash.

EXHIBIT 1. TRASH COLLECTION AT M-NCPPC FACILITIES CALENDAR YEAR 2001

Collection Organization	Tons
M-NCPPC	940
WMI Refuse Collection	396
Total	1,336

b. Recyclable Material Collection and Reuse

Recycling efforts and activities in M-NCPPC facilities can be broken into four distinct segments. Each has its own successes and failures. These segments include employee generated, customer generated, composting and reuse, and vehicle maintenance activities.

1. Employee Generated

In numerous office buildings and other facilities, mixed paper and commingled materials[5] are recycled. However, not every office building has both mixed paper and commingled recycling programs. Inside the office environment, individual employees are responsible for separating recyclable materials from refuse and placing the material into the appropriate recycling containers. Maintenance staff is then responsible for transporting recyclable material to containers outside the office building to storage areas. Under a contract separate from the trash collection contract, WMI collects the recycled material and transports it to a recycling facility. WMI collects recyclable materials from 18 collection/consolidation points within the Park and Planning Department. Exhibit 2 identifies the locations where WMI collects recyclable material and the tons generated at each facility. It is important to note that the weight of material collected is not based on actual totals, but on the size of the container and the type of material collected in each container. This method is accepted by the County's Office of Solid Waste Services in determining recyclable material generation, but can over estimate recycling, particularly if the container is not filled.

[5] Commingle material includes plastic bottles and cans.

EXHIBIT 2. M-NCPPC RECYCLING LOCATIONS SERVICED BY WMI RECYCLING CONTRACT AND AMOUNT OF MATERIAL GENERATED PER YEAR

Facility Name	Mixed Paper Collection[1]	Commingled Collection[2]	Tons
Agricultural Farm Park	√	√	9.9
Black Hills Regional Park	√	√	13.8
Brookside Gardens	√	√	12.2
Cabin John Regional Park	√	√	27.8
Little Bennett Golf Course	√		15.6
Little Bennett Regional Park	√	√	16.6
Meadowbrook Maintenance Yard	√	√	21.8
MRO – Planning	√	√	17.9
Needwood Golf Course	√	√	9.2
Northwest Branch Golf Course	√		11.7
Parkside Headquarters	√		7.8
Pope Farm Nursery	√	√	6.0
Rockwood Manor	√	√	9.9
Saddlebrook Headquarters	√	√	19.8
Seneca Lodge	√	√	6.1
Shady Grove Maintenance Facility	√	√	23.9
South Germantown Recreational Center	√	√	16.2
Wheaton Ice Rink	√		7.8
TOTAL			265.6

1Mixed paper includes office paper, newspaper, and cardboard.
2Commingled includes plastic bottles, metal and aluminum cans, and glass containers

For facilities where recyclable materials are separated and WMI does not collect the recyclable material, it becomes M-NCPPC's responsibility to collect the materials and transport it to one of the collection/consolidation facilities. In most instances, the collection of recyclable materials and transportation of the recyclable material is sporadic. If the materials are not transported to a collection/consolidation facility, it becomes trash.[6] Employees may separate recyclable materials and trash in their day-to-day activities, but in some instances, this separation is not

[6] There are some exceptions where M-NCPPC staff collects the recyclable material and deliver it to a recycling facility not serviced or operated by WMI. The amount of recycled material going this route is unknown.

continued and the material is disposed as trash and taken to the transfer station as refuse. There are many reasons for this to occur including:

- Inadequate training or supervision of staff
- Inadequate resources to maintain separation of the material when collected by maintenance staff
- Insufficient onsite storage space to store recyclable materials separate from refuse
- Inadequate resources to transport the recyclable material to a WMI collection point, and
- Improperly equipped vehicles to maintain separation of the recyclable and refuse materials.

2. Customer Generated

There are five regional parks with approximately 30,000 acres of land containing picnic areas, playing fields, playgrounds, amphitheaters, trails, and other public facilities. At present minimal recycling takes place within the parks due to difficulties inherent in a large park system. Without a vehicle that keeps recyclables and refuse separate, collection of recyclables and transportation to a collection point becomes nearly impossible. The lack of a truck and staff needed for collection has resulted in most managers opting to avoid recycling altogether since budgets do not allow for equipment and staff to maintain such a program.

Parks, picnic areas, recreational buildings, enterprise facilities, and conference centers do not provide adequate opportunities for customers to recycle. Either Parks are void of recycling containers or, if they are present, they are inappropriate in size, location, and easily contaminated. Experts in the recycling industry and county staff agree that a successful recycling program requires an appropriate number of containers, container features to limit contamination, and the co-location of recycling containers with refuse containers. Information is not available to estimate the amount of recyclable material generated by M-NCPPC customers.

3. Composting and Reuse

Wood and organic material are composted at Brookside Gardens, Pope Farm Nursery, and at M-NCPPC golf courses. Brookside Garden, the largest M-NCPPC composting facility composts

approximately 200 cubic yards of organic waste each year. If it were not composted, this material would be transported to the Shady Grove transfer station for disposal. The composted material includes seasonal plants and leaves generated onsite or collected from office buildings and other public locations, and wood chips. Pope Farm nursery also has a composting operation, but it relies on material generated by the county or by private companies. M-NCPPC golf courses compost grass clippings. This is a common practice for all golf courses and is not included in the solid waste stream. In addition, downed trees are chipped to a size useable for tree mulching, ground cover and trail maintenance or made available as free firewood to county residents. M-NCPPC staff estimates that approximately 2,600 cubic yards of wood chips were generated in the past year and either composted or reused. This translates into approximately 650 tons of material.

Organic material that is not composted or reused is transported to the Shady Grove transfer station and dumped in the organic waste collection section of the transfer station. It costs M-NCPPC $29 per ton to dispose of this material at the transfer station. From November 1, 2000 to October 31, 2001, M-NCPPC disposed of approximately 48 tons of organic material at the Shady Grove transfer station. Exhibit 3 indicates the amount of organic material composted, chipped, or delivered to the county transfer station for disposal in the past year.

EXHIBIT 3.
M-NCPPC COMPOSTING AND REUSE (Nov 2000 to October 2001)

Location	Tons
Brookside Garden Composting	185
Woody Material Chipped, Reused, or Composted	650
Material Delivered to Transfer Station	48
Total	883

4. Vehicle Maintenance Activities

Federal and State regulations require the capture and recycling of certain fluids and wastes from vehicle maintenance activities. For example, the collection and recycling of used oil is mandatory under Federal regulations. In Maryland, the Scrap Tire Law prohibits the disposal of tires in landfills and the State has developed a system for the collection and recycling of scrap tires. In addition, the National Pollutant Discharge Elimination System (NPDES) storm water

management regulations require best management practices at equipment and vehicle maintenance yards. This regulation encourages the recycling of vehicle maintenance wastes. Exhibit 4 indicates number and kinds of materials recycled through M-NCPPC vehicle and equipment maintenance activities.

EXHIBIT 4.
VEHICLE MAINTENANCE RECYCLING
MATERIALS AND AMOUNTS

Location	Quantity
Converters	10
Starters	40
Alternators	60
Freon	40 pounds
Used Oil	900 gallons
Anti Freeze	220 gallons
Batteries	180
Tires	2000

The total amount of material recycled through equipment and vehicle maintenance activities equals approximately 27 tons.[7] All mechanics are required to recycle materials such as batteries, tires, anti-freeze, used oil, filters, and other vehicle maintenance parts. The Commission documents the collection and disposal of these materials disposed and recycled from the equipment and vehicle maintenance shops. This program is quite efficient and has been working successfully for many years. Records have been made available for the evaluation of this recycling improvement process.

c. Materials Recycled at Various Facilities

Exhibit 5 indicates the type of materials collected for recycling at some of the M-NCPPC facilities based on the survey responses. Managers have indicated the collection of these materials at their facilities but the participation is sporadic. It is important to note that much of the recycling material gets disposed of as trash due to the poor collection methods and the lack of recycling truck transportation.

[7] This amount is not included in the total amount of solid waste generated or in the percentage of material recycled.

EXHIBIT 5.
M-NCPPC RECYCLING SURVEY RESULTS [1,2]

Facility Name	Paper	Cardboard	Glass	Plastic	Aluminum	Vehicle Maintenance
Agricultural Farm Park	√	√	√	√	√	
Black Hills Regional Park	√	√	√	√	√	
Brookside Gardens	√	√	√	√	√	√
Cabin John Ice Rink	√	√	√	√	√	
Cabin John Maintenance Facility	√	√	√	√	√	√
Cabin John Regional Headquarters	√	√	√	√	√	
Little Bennett Golf Course	√	√				√
Little Bennett Regional Park	√	√	√	√	√	
Meadowbrook Maintenance Facility	√	√	√	√	√	√
Meadowside Nature Center	√	√	√	√	√	
MRO – Planning	√	√	√	√	√	
Needwood Golf Course	√	√	√	√	√	√
Northwest Branch Golf Course	√	√				√
Parkside Headquarters	√	√				
Pope Farm Nursery	√	√	√	√	√	
Olney Manor Park	√	√	√	√	√	
Rock Creek Regional Park	√	√			√	
Rockwood Manor	√	√	√	√	√	
Saddlebrook Headquarters	√	√	√	√	√	
Seneca Lodge	√	√	√	√	√	
Shady Grove Maintenance Facility	√	√	√	√	√	√
Sligo Creek Golf Course	√	√		√	√	√
South Germantown Recreational Area	√	√	√	√	√	
Wheaton Ice Rink/Carousel	√	√				
Wheaton Regional Park	√	√	√	√	√	√

1. There are inconsistencies with the results of this survey and what is actually being recycled at many of these facilities.
2. Additional facilities throughout the Commission may be recycling materials however they have not completed the survey.

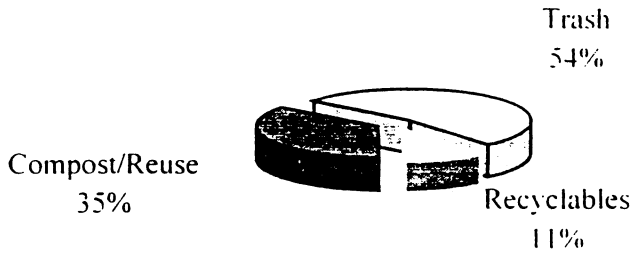
Other facilities may recycle material generated on site, however, the frequency and consistency is based on a number of factors including distance to WMI recyclable material collection points.

manpower, and type of materials collected. The amount of recyclable material collected and transported by M-NCPPC staff to a collection/consolidation point is unknown.

d. Current Rate Of Recycling

M-NCPPC generates a large amount of material for disposal. From November 1, 2000 to October 31, 2001 approximately 2,490 tons of solid waste was generated by Park and Planning. During this period, 1,154 tons of material were separated and recycled or composted. This equals 46 percent[8] of the total amount of solid waste generated. The remaining 54 percent of the solid waste generated is trash and disposed at approved and permitted solid waste disposal facilities. Exhibit 6 indicates the percentage of material recycled, composted, or reused by M-NCPPC.

Exhibit 6.
Percent of Solid Waste Generated by M-NCPPC Recycled, Composted/Reused, and Trash



In comparison, in October 2001, Montgomery County Public Schools recycled 15 percent of the solid waste generated and the county as a whole achieved a 36.5 percent recycling rate. In fiscal year 2001, approximately 10 percent of the solid waste delivered to the Shady Grove transfer station was organic material.

e. Recycling Committee

The current Recycling Committee is made up of seven volunteers from a few divisions within the Commission. The Committee has been in existence for a number of years but has been

[8] This number will change as better information becomes available from WMI.

unable to mount a comprehensive, system wide recycling program. There are many reasons for this including: lack of adequate time since all Committee members have full time employment in other areas, lack of mission statement and standards, inconsistent attendance, lack of funding, limited authority with no clear direction.

IV. SUGGESTED IMPROVEMENTS FOR M-NCPPC FACILITIES

Assessing the recycling operations throughout the 30,000-acre M-NCPPC system is complex. The system includes numerous office buildings, nature centers, gardens, passive and active recreational areas, picnic areas, campgrounds, recreational buildings, golf courses, tennis centers, equestrian centers, skating rinks, vehicle maintenance yards, and miles of bicycle, equestrian, and foot paths. If each building or activity were separate businesses, it would have to conduct individual assessments, develop options, and recommend/make improvements for each business. Because of the complexity of M-NCPPC, an assessment of each facility was not possible; however, because of the similar nature of the operations for many facilities it was not necessary. The recommendations must consider staffing, proximity to recycling collection/consolidation points, peak seasons, and the nature of the activity that occurs in each facility.

A few general recycling principles should be applied to all M-NCPPC facilities:

1. Senior management must mandate all employees to recycle and direct staff to support and expand recycling efforts.
2. M-NCPPC must develop a policy to *Reduce, Reuse, and Recycle* materials. The Planning Board should adopt the policy.
3. All recycling containers must be color-coded and have the universal recycling symbol on all sides of the container. Bold letters and signage is needed on containers.
4. An education program must be developed to educate all staff members and Park patrons on the merits and need for recycling.
5. Patrons and staff should be afforded the opportunity to recycle.

The following sections identify specific recommendations for various sectors within M-NCPPC.

a. Commission Office Buildings

Participation in office recycling throughout the Commission varies greatly from location to location and there is room for improvement. Increasing office-recycling rates can be achieved when one looks at the criteria needed to make a program successful. The Montgomery Regional Office (MRO) building at 8787 Georgia Avenue is achieving a high recycling rate, and we must ask how?

At every desk, in all meeting rooms, near all copy machines, and the vending machines, there are recycling containers that are routinely picked up in a separate bin and wheeled to the dumpster which is located in the parking lot of the building. There is an on-site holding area for the ease of the custodial staff. No transportation is needed to haul the recyclable materials to the nearest dumpster, which in many park locations may be miles away. This appears to be the key element, for there are no separate trucks within the system specifically for hauling recyclable materials to a central collection point. MRO is one of 18 locations where WMI collects recyclable material. This approach does not put unreasonable expectations on custodians who do not have a means to transport recyclables.

From observation, speaking to staff, and obtaining suggestions from Maryland Department of the Environment (MDE) recycling staff it appears that the following will improve our recycling rates for office complexes.

1. Recycling containers must be in each office, central areas, meeting rooms, computer areas, printing stations, or other facility rooms not mentioned. These containers must be sized according to the needs of that area. All containers must be routinely picked up to avoid overflow and contamination.
2. There must be space available at the facility for the custodians to store accumulated recyclable material. Separate containers must be provided for mixed paper and commingled material.
3. If space is unavailable at the office facility, a vehicle must be available to transport all recyclable materials to a central collection point. If a separate truck is not available, it is highly likely that the recycled materials will be combined with the regular trash and disposed as refuse.

4. The location could become a WMI collection point.

b. Enterprise Facilities

Enterprise sites typically have one main facility such as ice-rinks, golf courses, tennis courts, etc. This makes collection of recyclable material easier since it is generated within the confines of a single building. However, public use of these facilities adds an additional level of difficulty. Problems such as contamination, public acceptance, bin identification and durability are obstacles to overcome. Education, persistence and a desire to routinely evaluate and modify the recycling program are imperative for recycling success.

Recycling improvements can be achieved through the implementation of the same principles as outlined in Section IV, other suggestions include:

1. Recycling containers must be in all public areas, offices, locker rooms, or other facility rooms, at concession stands and vending machines. These containers must be sized according to the needs of that area. All containers must be routinely picked up to avoid overflow and contamination.
2. There must be space available at the facility for the custodial staff to store accumulated recyclable material. Separate containers must be provided for mixed paper and commingled materials.
3. If space is unavailable at the enterprise facility, a vehicle must be available to transport all recyclable materials to a central collection point. If a separate truck is not available, it is highly likely that the recycled materials will be combined with the regular trash and disposed as refuse.
4. The facility should become a WMI collection point.
5. Evaluate, assess, and when needed, redesign recycling strategies after 6 months.

c. Maintenance Facilities

Maintenance yard recycling rates vary with the worst case being zero participation. Some facilities with a higher participation rate have dumpsters located within the maintenance yard complexes; others just have a collection of extra large trash bags full of cans and bottles waiting

delivery to a recycler. Throughout our investigation, it became clear that recycling begins with the insistence and encouragement of the park managers. The maintenance facilities that recycle correlate with the manager's direction. Therefore, it is important that all managers and regional chiefs encourage staff to participate in the recycling program.

Suggested improvements for improving recycling in the maintenance facilities include:

1. Implement a mandatory employee recycling training program.
2. Post signs and fliers in staff mailboxes.
3. Implement incentive programs for staff participation.
4. Recycling containers must be in all offices, work areas, kitchens and lounge areas. These containers must be sized according to the needs of that area. All containers must be routinely picked up to avoid overflow and contamination.
5. There must be space available in the maintenance yard for the custodial staff to store accumulated recyclable material. Separate containers must be provided for mixed paper and commingled materials.
6. If space is unavailable at the maintenance facility, a vehicle must be available to transport all recyclable materials to a central collection point. If a separate truck is not available, it is highly likely that the recycled materials will be combined with the regular trash and disposed as refuse.
7. Evaluate, assess, and when needed, redesign recycling strategies after 6 months.

d. Local Parks

There are hundreds of M-NCPPC small local parks with ball fields, playgrounds, tennis courts, and multi-use courts. They are scattered throughout 30,000 acres of parkland in the county. Each park has multiple trashcans but no recycling cans.

At present, if the Park Managers chose to recycle in the local parks, they would dispose of recyclable material in a central location, which is off-site, at one of the 18 WMI collection points. Assuming the public would not contaminate the recyclables with regular trash, the difficulty becomes the collection and transport of the recyclables to the collection point. The trash trucks the Commission own do not contain separate compartments for recyclable materials.

Ball fields attract large crowds throughout the week with team sport activities and plastic bottles and aluminum cans dominate the trashcans. To improve recycling rates within the local parks there are five approaches:

1. Install recycling containers next to every garbage can and collect recyclables in a separate truck. Then take the material to a central collection point for storage until collected by WMI. If possible, staff could take it to the recycling center from the collection points.
2. Install one and only one recycling container at the entrance/exit of a few local parks as a pilot program. The Commission could expand the WMI contract to include picking up the recycling material at the local park entrance/exit locations.
3. Commission will need to educate the public on the new park policies through signage, brochures, and publicity.
4. Retain all trashcans and do not install recycling containers. Instead, provide the park user with plastic bags (at entrance) to be used for the off-site transport of recyclables. In this approach, the recycling is up to the individual person. The Commission will need to educate the public on the new park policies through signage, brochures, and publicity.
5. Eliminate all trash & recycling cans from the local parks (i.e. Trash Free Parks). The Commission will need to educate the public on the new park policies through signage, brochures, and publicity.

Suggestions for Improvement:

1. Implement an employee recycling training program.
2. Begin a "Recycling Improvement & policy changes" column in the Update.
3. Implement incentive programs for staff participation in the recycling program.
4. If we choose to recycle in the local parks, a separate truck or the addition of a recycling compartment must be installed on existing trash trucks. We would need to add the compartment to only one trash truck for a trial experiment to assure maneuverability and efficiency.

5. All actions taken will require public outreach and education.
6. If recycling containers are installed, they must be highly visible, color-coded, clearly marked on all sides and have the universal recycling symbols on all sides of the container. Bold letters and signage is critical to achieving a higher rate of success.
7. Evaluate, assess, and when needed, redesign recycling strategies after 6 months.

e. Regional Parks

Suggesting recycling improvements in the Regional Parks will mean adding a new program to a budget that is already over-extended. There are numerous options to take which may include but not be limited to the following:

1. A recycling budget must be available for the start-up of an expanded recycling program. The budget could be used for some or all of the following: recycling containers, a trash collection vehicle or improvements to an existing vehicle, public signs, and fliers, additional staff.
2. If recycling is desired within the Regional Parks, there are a few ways to implement the program:
   a. Install recycling containers next to every garbage can and collect recyclables in a separate truck. Then take the material to a central collection point for storage until collected by WMI. If preferred staff could take it to the recycling center directly. This would result in a $0 tippage fee for commingled material, but another location would need to be found for mixed paper.
   b. Install a recycling container at the entrance/exit of the Regional Park. The Commission could expand the WMI contract to include picking up the trash at the Regional Park entrance/exit locations. The Commission will need to educate the public on the new park policies through signage, brochures, and publicity.
   c. Retain all trashcans and do not install recycling containers. Instead, provide the park user with plastic bags (at entrance) to be used for the off-site transport of recyclables. In this approach, the recycling is up to the individual

citizen. The Commission will need to educate the public on the new park policies through signage, brochures, and publicity.

d. Eliminate all trashcans from the Regional Parks. The Commission will need to educate the public on the new park policies through signage, brochures, and publicity.

V. SUGGESTIONS FOR AN EDUCATIONAL PROGRAM

M-NCPPC must create or obtain educational brochures, conduct training programs, and create a recycling policy. A promotional campaign will be necessary to educate staff and create public awareness.

a. Employee Education

Full time and part time staff needs recycling training to establish a successful waste reduction program. The following educational tools will help guarantee employee cooperation:

- Conduct a brief training program at the outset to introduce employees to the program and encourage participation.
- Provide posters, flyers, and other training materials to remind employees of the need to reduce waste and recycle.
- Encourage employees to provide suggestions on waste reduction techniques. Consider providing cash prizes for waste reduction contests or initiate other incentive programs. Let employees know their efforts are helping.
- Provide annual reports on M-NCPPC recycling progress.

b. Public Education

Many parks have implemented recycling programs but contamination of the recycling containers discourages recycling. This may be due to a lack of public education on recycling, bin identification and confusion, the regular trashcans may have been full, signage was not multi-lingual, or a resistance to recycling.

Many residents in Montgomery County have diverse multi-ethnic backgrounds and English may not be their first language. Montgomery County also has a transient population (students, tourists, and conference goers), who may not be familiar with the local recycling program. The Commission can increase recycling participation if awareness and outreach programs were designed with the community's diversity in mind using multi-lingual signage.

The new recycling program should include public relations such as:

- Advance publicity to inform residents that there will be a new policy implemented within the Park system
- Press coverage in local newspapers, television, and radio
- A "kick off" event, which may include public officials to draw attention to the startup of the program
- Implement ongoing outreach program to report on the success of the program and encourage continuing participation
- Create or obtain bilingual county brochures, educational material, posters, and public service announcements
- KEEP THE PROGRAM SIMPLE: The more complex a recycling program, the greater the possibility of confusion and system failure. This means the material needs to be clear and concise outreach materials explaining the Park systems strategy.

VI. SUGGESTIONS FOR HIRING A RECYCLING COORDINATOR

The implementation of a recycling program in a complex organization such as the Commission requires background knowledge of recycling programs that have been implemented successfully. Although there are many suggestions within this document, they are not based on experience. It is not wise to waste time and money on programs that have met with failure in other park systems. Therefore, it is important to hire a recycling coordinator who has knowledge of successful recycling programs and has the skill to work with staff to tailor a program to the needs

of the Commission. As it stands, we cannot do this without guidance from experts. Some of the tasks a Recycling Coordinator can assist in have been mentioned throughout this document but are briefly outlined below:

- Work with available Federal and State Assistance Programs
- Investigate other collection programs and building on successful programs
- Design or obtain educational brochures, literature, and signage to be used for training staff and informing patrons
- Recommend practical recycling options based on existing conditions, budget constraints and sound research and experience
- Design and implement the education program for employees and the public.
- Design or select uniform colors and style recycling containers. Design symbols and text to be placed on all recycling containers.
- Implement program for each park according to the needs.
- Develop a cost effective recycling program.
- Work with PG-M-NCPPC to coordinate their recycling efforts with MC-M-NCPPC
- Develop a tracking system for organic materials recycled.
- Conduct and implement ongoing evaluations of the recycling program.
- Conduct a trash audit to determine the recycling potential.
- Evaluate the efficiency and effectiveness of current trash removal practices, routing, and equipment.

VII. SUGGESTIONS FOR IMPROVING THE RECYCLING COMMITTEE

As mentioned in Section III, the existing recycling Committee has been unable for a variety of reasons to implement an efficient recycling program. If M-NCPPC is committed to creating a sustainable recycling program that is suitable for the staff and the patrons, it will be necessary to reconstruct the Recycling Committee. The Committee should be made up of a cross section of staff within M-NCPPC including but not limited to: upper management, park managers, regional chiefs, maintenance staff, office personnel, custodians, environmental staff, etc.

This newly formed Committee should then work closely with the recycling coordinator to assist,

influence and support the goals of the recycling program. The Committee should partake in the writing of a commission policy, mission statements and mandates since all stratification levels will be affected by the newly developed policy.

Due to the complexity of the Commission, the Recycling Coordinator will need to work with the Committee in the various tasks outlined in the Executive Summary and Section VIII: General Recommendations: Step 4. It is only when consensus is met that the program can be implemented successfully.

VIII. RECOMMENDATIONS

a. General Recommendations

M-NCPPC needs a formal waste reduction and recycling program that will take the Commission into the 21st Century. Emphasis should be on a commitment to *recycle* all recyclables, *reduce* waste through responsible, sustainable resource management, and purchase *reused/recycled* materials in all areas of the Commission. At a minimum, the Commission should implement the following:

Step 1- Senior management must mandate all employees to recycle and direct staff to support and expand recycling efforts.

Step 2- M-NCPPC must develop a policy to Recycle, Reduce & Reuse materials. The Planning Board should adopt this Policy.

Step 3 – Establish a budget to expand recycling program to enable implementation.

Step 4- Hire a Recycling Coordinator who is experienced in recycling programs throughout the country who can advise, research, plan, implement and monitor a Commission wide recycling program. This person will:

- Work with available resources from EPA's Waste Wise Program, MDE's Commercial Recycling Assistance Program.
- Complete M-NCPPC's analysis of the refuse.
- Investigate other collection programs to identify efficient means of collection, routing, needed equipment, and changes necessary.

- Design or obtain educational brochures, literature, and signage to be used for training staff and informing patrons.
- Design and implement the education program for employees and the public. The recycling program will succeed only if every employee understands the importance of recycling and is motivated to participate. A well-publicized kick-off meeting, with a training session (including program needs, goals, collection methods, and acceptable and unacceptable items) will help. Training must continue after the program begins, with frequent reminders to employees. New employees should be trained as part of regular orientation programs. A "kick-off" memo to all employees is an effective way to begin internal communication about the program. The public should be informed through local newspapers, bulletin boards, kiosks, fliers, handouts, etc.
- Develop an efficient collection system
    - Work to design a program tailored to the needs of each building and facility.
    - Size recycling containers according to maximum need.
    - All recycling containers must be a uniform color with the international recycling symbol and bilingual.
- Establish, coordinate and direct a new recycling committee
- Design or select uniform colors and style recycling containers. Design symbols and text to be placed on all recycling containers.
- Install additional recycling containers according to the needs of site.
- Expand the number of Waste Management Inc., pick-up locations.
- Work with PG-M-NCPPC to coordinate their recycling efforts with MC-M-NCPPC.
- Develop a tracking system for organic materials recycled.
- Decide efficient pick-up and collection points
- Begin writing articles on recycling within the park system for the Update and local newspapers.

- Conduct Ongoing Evaluations of the Program. Ongoing periodic evaluations are critical to the success of the program to reinforce the Commissions commitment to recycling, and make improvements where needed.

Step 5 - Implement an Employee Incentive Program.
To achieve a successful recycling and waste reduction program, all employees must be willing to participate. Incentive programs may help overcome reluctance. Savings generated from an effective program should be redirected to the program creating the savings as a motivator to continue or do more.

Step 6 - Publicize the Success of the Program
This will encourage increased participation and enthusiasm.

Step 7 – Begin a "Recycling Improvement & Policy Changes" column in the Update.

Step 8 – Park and facilities managers must find ways for staff to transport recycling material to storage areas until ready for pick-up by WMI or delivery to recycling centers.

Step 9 – Increase the number of recycling containers in all office and enterprise buildings.

b. Phasing and Timeline

The goal of the recycling program is to achieve a minimum of 50 percent recycling by December 2004. In order to do this, the program should be strategically introduced through phases and monitored to ensure successes. Exhibit 7 below indicates the various recommendations and years in which the activities should be implemented.

Exhibit 7: Phasing Schedule for Recommendations

Phasing for Year 1	
Segment	**Tasks**
Senior Management	• Issue recycling mandate throughout MC-M-NCPPC • Develop a *Recycling, Reduce, and Reuse* policy • Obtain a Recycling Coordinator via consultant or temporary contract employee • Re-establish new multi-division recycling committee
Education	• Develop education program for staff & patrons • Develop brochures, signs and public relations program
Supplies and Equipment	• Expand WMI recycling contract in locations where maximum use & efficiency is achievable • Place recycling containers in all office buildings, and enterprise facilities. Size according to need
Regional Parks • Black Hills • Cabin John • Little Bennett • Rock Creek • Wheaton	 • Continue current program • Pilot program for main entrance pick-up for recyclables • Continue current program • Additional recycling containers • Additional recycling containers
Local Parks	• No changes in first year • Begin comprehensive assessment and identify feasible solutions
Enterprise Facilities	• Immediate placement of recycling containers for customers to use • Expansion of WMI contract to include commingle collection
Vehicle Maintenance Shops	• Continue current program
Maintenance Areas	• Provide additional recycling containers
Recycling Coordinator	• Assess recycling program to determine additional needs and improvements • Work with staff to develop an efficient recycling program • Establish & implement the recycling program • Establish, coordinate & direct new recycling committee • Monitor and report annual success and failures, adjust program as needed • Recommend improvements based on research, pilot programs, funding and equipment limitations • Begin writing articles for Update and local newspapers • Utilize free MDE and EPA assistance programs • Begin comprehensive recycling assessment • Coordinate Commission wide recycling efforts • Design & implement educational programs • Design brochures, signage, and select containers, etc. • Develop and implement recycling tracking system • Conduct trash audit

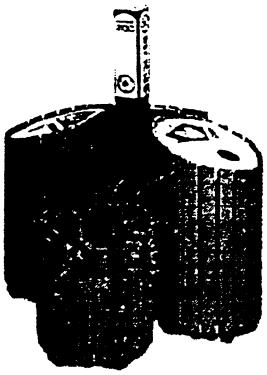
Exhibit 7: Phasing Schedule for Recommendations (continued)

Phasing for Year 2	
Segment	**Tasks**
Regional Parks	• Make changes based on Year 1 assessment
Local Parks	• Begin to implement program based on Year 1 analysis and rely on assistance provided by MDE and EPA.
Education	• Introduce education programs for staff and public • Introduce publications to staff and pubic
Supplies and Equipment	• Purchase additional containers and equipment where needed
Recycling Coordinator	• Continue Year 1 activities • Identify funding needs for recycling program • Identify potential funding and sources for recycling vehicle
Phasing for Year 3	
Segment	**Tasks**
Regional Parks	• Make changes based on Year 2 assessment
Local Parks	• Continue program implementation & assessment
Education	• Continue education programs for staff and public
Supplies and Equipment	• Purchase recycling vehicle and hire staff • Cease WMI recycling contract
Recycling Coordinator	• Continue annual assessments of all operations • Report recycling progress • Coordinate recycling committee • Identify funding resources for additional equipment

IX. Supply Costs

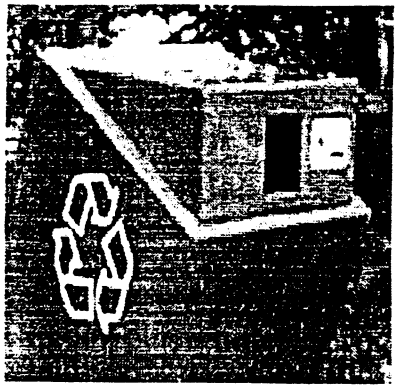
In order to improve M-NCPPC's recycling efforts, additional recycling containers are necessary. Additional recycling containers are needed for many building offices, enterprise facilities, parks, and other public and employee locations. The type, shape and size of the recycling containers may vary depending on use. For example, a recycling container in an office building does not need the same durability and means to prevent contamination, as does one in a park facility. This section only addresses the unit costs for recycling containers and a recycling vehicle. It should be used for cost estimation purposes only. The costs do not include labor costs associated with installing a recycling container, collecting the material from the recycling container, or labor associate with a recycling vehicle.

There is a wide variety of recycling containers available in market. Some types of containers depend on manual labor to be emptied and others rely upon mechanical means for emptying. The features on a recycling container is also important in reducing contamination from trash, susceptibility to vandalism, and nuisance animals. It is important that all containers be properly labeled and provide accessibility for customers.



The container system on the left is manufactured by the Windsor Barrel Works. This two-sided cluster system retails for $930. The system includes cast aluminum locking lids and two 35-gallon containers, a 3-sided post and signs.

The 70-gallon hide-a-bay system on the right is made of 100% steel and manufactured by Haul-All. The system retails for $741 and is permanently affixed to concrete base.



The 30-gallon containers on the left are galvanized steel containers manufactured by Windsor Barrel Works. The recycling containers sell for $182. This price includes lids and decals.

In the M-NCPPC Park system, the trash containers are brown drums on two wooden stakes. The stakes prevent patrons from moving the cans and but provide a swinging movement, allowing staff to empty the containers. Park Managers estimate that the cost to place additional containers, similar to the brown trash containers, in parks at $82 each. This includes the acquisition of the containers, panting of the containers blue, lids, and two stakes to hold the container. It does not include labor costs to install the cans in the parks.

Research was also conducting on identifying the unit cost for a recycling vehicle that could be used within the Park system. It was estimated that an 18-yard side loading, rear-dumping compactor recycling configuration on a 2020 Ford Super Duty F550 Chassis would cost approximately $60,000.

X. APPENDICES

A. DATA COLLECTION
B. OTHER PARK RECYCLING PROGRAMS
C. PURCHASING A RECYCLING TRUCK
D. SURVEY
E. SURVEY RESULTS
F. EPA'S WASTE WISE PROGRAM

APPENDIX A. DATA COLLECTION

Data collection and research of M-NCPPC's existing recycling program began September 2001. The first task was to determine the current recycling rates throughout the Commission. All records were gathered that were available for the disposal of trash, rubble and solid waste deposits to the Shady Grove transfer station.

Additional data was gathered for the recycling service collected by Waste Management, Incorporated (WMI). WMI provides recycling pick up at 18 M-NCPPC facility sites throughout Montgomery County. The size of the containers at each site as well as the frequency of collection determines the costs. The recycling rates are discussed in Section III, Existing Conditions.

Information was gathered from Brookside Gardens and Pope Farm Nursery on the amount of organic matter recycled. Composting is an integral part of waste disposal at Brookside Gardens with over 200 cubic yards of yard waste recycled annually. Little Bennett Golf Course is also known for recycling organic matter such as leaves; however, no data was collected pertaining to quantity.

As a part of the data collection, each Park Manager completed a survey (see Appendix D, Recycling Survey); this was used to identify strengths and weakness within the Commission recycling program. The survey identified bottlenecks such as transportation, staff, containers, finance, etc. On October 29, 2001, the Park Managers brought their completed survey to the Shady Grove Training Center to discuss the survey results, and provide recommendations on how to improve our recycling efforts. Many good ideas resulted from the meeting with the Park Managers. Many managers stated that they composted organic material but there is no way to track the quantities for their records.

In November 2001, Mark Pfefferle and Tina Schneider attended the Third Annual Recycling Expo sponsored by Prince George's County Park & Planning Commission. The Expo featured a

variety of exhibitors/vendors displaying environmentally conscious products & demonstrations that are being utilized by PG-MNCPPC. Many vendors were there to educate the public and the staff about new products available.

Laura Connelly is a member of the PG-MNCPPC recycling committee, which has one member from each department within the Commission. The Committee developed a "Mission Statement" for implementation PG-MNCPPC. Their mission is to "create a sustainable program for their employees and patrons to actively seek ways to reduce, reuse, and recycle waste". They will be incorporating educational tools, promoting the use of recycled materials and apply energy efficient and environmentally sound practices in every area of operations.

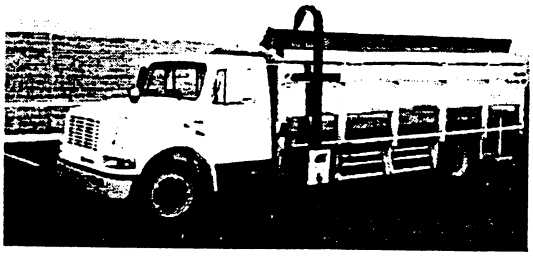
Staff contacted Allen Pultyniewicz of the county's Office of Solid Waste Services. Allan is the Business Recycling Coordinator for Montgomery County and a valuable information resource. He provided guidance on the county's recycling regulations, recycling techniques, and effective programs. He was also instrumental in providing material tonnage at the Shady Grove transfer station.

Contact was made with Cliff Dowling of the Maryland Department of the Environment, Recycling Specialist who runs a free State program that assists business and county agencies to develop ways to improve waste reduction and recycling programs. The specialist will visit sites and perform a waste assessment to determine the type and amount of waste generated. Using this information, he makes recommendations for establishing or improving the efficiency of the recycling program.

Neither of the two co-writers of this report have experience in developing recycling programs throughout the United States so a WEB search was done to see how other park systems recycle their waste. With over 78,000 entries, it became a daunting task given the short amount of time available to produce this report. However, it appeared that many State Parks and the National Park system has implemented a "Carry Out" trash policy in their parks.

APPENDIX B. PURCHASING A RECYCING TRUCK

The Commission should consider the staffing and purchase of a Recycling Truck that can be driven from location to location to pick-up recyclables. This option would eliminate the need for an annual $15,559.00 contract with Waste Management, Inc., and enable the Commission to recycle at all facilities without a separate contract or the need for existing staff to transport recyclables to a collection point.



- It should be noted that our research made it clear that we must pick up recyclables at many more facilities if we are to improve our recycling rates. If we double the recycling pick-up points to 34 locations, the cost becomes approximately $32,000 annually. If we choose not to increase our existing contract and to staff and purchase a recycling truck, the $32,000 is approximately 53 percent of the cost toward the purchase of a recycling truck. Recycling trucks vary in cost but an 18-yard side loading, rear-dumping compactor recycling configuration on a 2020 Ford Super Duty F550 Chassis was estimated to cost $60,000. This would enable the Commission to pick up many more sites then with our current contract. A new truck would have the capability to accommodate dumpster pick-ups, and 3-5 separate compartments for paper, plastic, glass or any desired combination.

Although the dollars to own and operate a recycling vehicle is a lot of money, it may be worth the expense to the Commission when all the factors are considered.

- A standard high quality recycling truck should last up to 15 to 20 years. If the recycling fees don't increase over the next 15 years, M-NCPCP will have spent $466,770 in pick-up fees for the pick up of recycling materials for only 34 locations. Which would not greatly improve our recycling rates

- If the Commission owned its own recycling truck, much more then 34 locations could have their recyclables picked up, which would improve our recycling rates.

eliminate the difficulty in trying to transport recyclables to a few central locations, and be a model to other park systems.

- If Montgomery County does not want to take on the additional expense, it may be possible to share the cost of the truck with Prince George's County Parks and Recreation Department.

- If there is not enough money in the budget for a new truck, other options may include writing a grant as the University of Illinois did in 1993 where they received $50,000 grant for a multi-compartment, rear-load compaction vehicle for the simultaneous, but separate collection of cardboard and paper products from all buildings on campus. Recycling rates went from below 20% to above 40% with rates still rising.

- The Commission could hold a fundraiser event to raise money for a recycling truck to gain public support, publicity and awareness. The event could include a walk, arts, crafts, music, a mobile climbing unit, environmental education, park program tables, etc.

- With the purchase of a recycling truck with a hydraulic system, the amount of personal job injuries may be reduced.

APPENDIX C. OTHER PARK RECYCLING PROGRAMS

1. "Penn Roosevelt State Park in Pennsylvania implemented a carry-in/carry-out trash disposal program for all small parks. There are no trash collection or recycling facilities. Visitors are asked to limit the amount of disposable items brought to the park and to take all trash, garbage, and recyclables home." [1]

2. Maroochy Shire Waste Services in Queensland, Australia, has seven caravan parks in prime beachfront locations on the Sunshine Coast. Until now, there were no recycling facilities in public places such as parks in Maroochy Shire. A trial program was implemented to collect recyclables such as glass, aluminum, and plastic, which will be linked with the residential curbside residential recycling pick-up, which is highly successful. Maroochy Shire began a ten-month trial to "establish a system for recycling which encourages source separation of waste in public places and to determine the most effective and successful system for collecting recyclables from public places." [2] Maroochy Shire is "aiming to provide public place recycling receptacles which are attractive, readily identified, simple to use and easy to service. The ten-month trial will assess the viability of collecting recyclables from parks and public areas, and acceptance of public place recycling and the suitability of different recycling receptacles for public places." [3]

3. Brandywine Creek State Parks in Greenville, Delaware, have drop off recycling bins in their parks. They are stationed at key locations for citizens to use.

4. Montgomery County, Maryland created a new position within the School Board to assist and create a recycling program.

5. Prince George's County Park & Planning Commission took one year to develop a sustainable program for employees and patrons by actively seeking ways to reduce, reuse and recycle within the Commission. Their goal is to reduce waste, incorporate educational opportunities, promote

[1] Penn Roosevelt State Park: http://www.parec.com/state_parks/statepks.htm

the use of recycled materials, and apply more energy efficient & environmentally sound practices in every area of operation. They created a new Commission wide vision and mission statement along with an Executive Summary and Commission Policy that would support the recycling efforts outlined in their vision and mission statement.

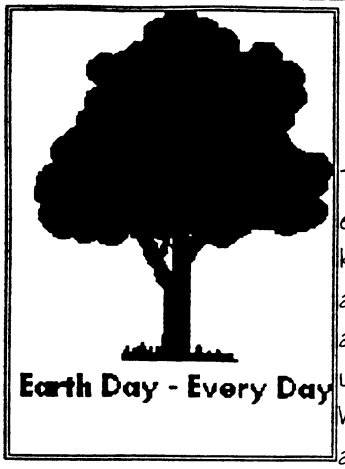
6. The City of Alexandria, Virginia, Parks and Recreation Department does not recycle in any parks.

7. In 1998, the U.S. National Parks Service implemented a recycling program in seven parks, including Acadia, Great Smoky Mountains, Grand Canyon, Yosemite, Mount Rainier, the Everglades, and the National Mall in Washington, D.C. The program features recycling bins near the visitors centers, concession stands, and provides special recycling bags for hikers and campers, and kiosks made from recycled materials. "In the first two years of the program, visitors recycled over 616,000 pounds of plastic, glass, and aluminum."[4] Since then, many more National Parks have been added to the above list of participants.

8. The State University of Illinois purchased a recycling vehicle through a grant "which enables the University to expand its collection capabilities and increase the opportunities to achieve a higher recycling rate".[5]

9. The Maryland State Park Service implemented a Trash-Free park system in which the claims are one of success. "In order to promote and encourage recycling, reduction of waste and reuse of our resources, all trash barrels, receptacles and dumpsters have been removed from picnic and beach areas. Visitors to day-use areas are provided with bags when they enter parks and are asked to take home their own refuse. Please pack your picnic in reusable containers and help us keep our parks clean"[9]

[3] Ibid
[4] The Rotten Truth (About Garbage): U.S. National Park Service. http: www.astc.org/exhibitions/rotten/park.htm
[5] Recycling Newsletter: March 1997: University Recycling Receives Grant, Plans to Buy New Truck. http://www.ppo.ilstu.edu/fm/campserv/recyling/ newsletters/april97.htm
[9] About the Forest and Park Service: http://www.dnr.state.md.us publiclands/about.html



APPENDIX D. MANAGERS RECYCLING MATERIALS SURVEY

This survey is part of a comprehensive study within the Commission to evaluate the strengths and weakness within our recycling program: We know the Commission is recycling but we want to improve our rates and identify how it can be achieved with minimum inconvenience to you and your staff. In order to do this we need your assistance to help us understand the difficulties of collection. transport and pick-up. Without your impute we wont be able to address the needs of staff and improve the Commissions recycling program. Please complete the following survey to the best of your ability & *Bring it to the Meeting at Shady Grove Training, October 29th, @ 9:00-12:00pm.*

☞ Please be comprehensive in your descriptions and include additional paper if necessary.

Thank you for your assistance and time!

Name: _____

Person In Charge of Recycling: _____

Location: _____

1. Do your *Offices* (maintenance facilities, park offices, trailers, etc..) recycle all aluminum, glass and paper?

_____

_____

_____

2. Are the *Parks* (regional & local) currently recycling all aluminum, glass and paper? If not, what needs to be done to improve your rates?

_____

_____

3. Are the *Enterprises* (golf courses, concessions, ice-skating, etc.) currently recycling all aluminum, glass and paper? If not, what needs to be done to improve your rates?

_____

_____

4. Would you say that your recycling program is working at maximum efficiency?

_____

If not, how can it be improved?

☐ More Bins ☐ Additional Dumpsters at Collection Points ☐ Better Signage
☐ Increased Training ☐ Separate Trucks for Collection of Recycling Material

5. Is there a centrally located collection point (a large dumpster) for staff to bring collected glass, paper, cardboard and plastic?

☐ Yes ☐ No

6. Are the dumpsters large enough if we increase the amount of our recycling?

☐ Yes ☐ No

7. Do you have a collection truck for recycled materials that enables staff to bring recycled material to a centrally located dumpster?

☐ Yes ☐ No

8. How often are the recycling containers (not dumpsters) located throughout the buildings and parks being collected ?

_____

9. Is it often enough? ☐ Yes ☐ No

10. Is your recycling material being picked up by an outside vendor or does staff dispose of it?

☐ Yes ☐ No

11. If you use an outside vendor who is it and does that work for you?

_____

_____

12. Do you recycle tires, batteries, oil, lumber? Please indicate all materials your site recycles.

_____

_____

13. If you were in charge of improving and developing a Commission recycling program, what would you do to increase our rate of recycling in the parks, offices and enterprise areas? Please be specific and provide suggestions and details.

_____

_____

14. Would you be willing to work with us to develop a better Commission Recycling Program?

☐ Yes ☐ No

APPENDIX E. SURVEY RESULTS

1. **Do your *Offices* (maintenance facilities, park offices, trailers, etc.) recycle all aluminum, glass and paper?**

Yes: 1, 2, 5, 6 paper and cardboard, 7, 8, 9, 10, 11 we have proper containers but most people do not utilize them, 12, 13, 14, 15, 16 yes for facilities, 17, 18

NO: 3

2. **Are the *Parks* (regional & local) currently recycling all aluminum, glass and paper? If not, what needs to be done to improve your rates?**

YES: 7, 10 only at select locations, 12

NO: 6, 11, 13 we only have time and manpower to pickup the normal trash, 16 aluminum only

1 Need more education

14 Currently being looked at. There are recycling containers for aluminum at most of the local parks.

3. **Are the *Enterprises* (golf courses, concessions, ice-skating, etc.)? currently recycling all aluminum, glass and paper? If not, what needs to be done to improve your rates?**

YES: 1, 2, 3, 10 only at select location, 16 for boat shop, 18

NO: 4, 17 need site dumpsters

Unsure: 6, 13

4. **Would you say that your recycling program is working at maximum efficiency?**

YES: 2 for staff, No for public, 7, 10, 13 only at the Olney Manor (I requested small blue bins for the office months ago and still have not received them), 15

NO: 1, 3, 4, 8, 11, 12, 16 too much trash, 17, 18

If not, how can it be improved?

- More Bins 1, 3, 4, 6, 10, 13, 16, 17, 18
- Additional Dumpsters at Collection Points 1, 2, 3, 4, 6, 10, 11, 17, 18
- Better Signage 1, 2, 4, 8, 10, 11, 12, 16, 17, 18
- Increased Training 1, 8, 11, 12, 17, 18
- Separate Trucks for Collection of Recycling Material 3, 4, 10, 11, 14, 16, 17

5. **Is there a centrally located collection point (a large dumpster) for staff to bring collected glass, paper, cardboard and plastic?**

YES: 1, 2 only for paper, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 paper only, 18

NO: 4

6. **Are the dumpsters large enough if we increase the amount of our recycling?**

YES: 1, 5, 7, 8, 9, 12, 13, 15, 17, and 18

NO: 2, 3, 4, 6, 10, 14, and 16

7. **Do you have a collection truck for recycled materials that enables staff to bring recycled material to a centrally located dumpster?**
   YES: 5. 7. 8. 9. 12. and 15
   NO: 1. 2. 3. 4. 6. 11. 13. 14. 16. 17. and 18

8. **How often are the recycling containers (not dumpsters) located throughout the buildings and parks being collected?**
   Daily 7
   Weekly 1. 6. 8. 17. 18
   Biweekly
   Service as needed: 2
   Don't Know: 3
   3x a week: .12
   NA: 4
   On call: 5
   Twice a month: 14

9. **Is it often enough?**
   YES: 1. 2. 7. 8. 9. 10. 12. 15. 16. 17. and 18
   NO: 4. 5. 6. and 14
   NA: 3

10. **Is your recycling material being picked up by an outside vendor or does staff dispose of it?**
    YES: 1. 2. 3. 7. 8. 9. 10 staff. 12. 15. 17. 18
    NO: 4. 11. 13 staff does. 14 staff. 16 staff

11. **If you use an outside vendor who is it and does that work for you?**
    Waste Management 1. 2. 6. 8 need commingled. 12. 15. 17. 18

12. **Do you recycle tires, batteries, oil, lumber? Please indicate all materials your site recycles.**
    1: Tires. batteries. tin. heavy metals. aluminum. mixed paper
    2: Paper/cardboard pickup by outside vendor. Aluminum/plastic taken to Saddlebrook. Tires and batteries are taken to Shady Grove. Oil is picked by outside vendor.
    3, 4, 5: No response
    6: Oil. concrete. auto shop material. asphalt
    7: Tire. chemicals. batteries. oil. scrap metal. firewood. paper. cans. bottles. cardboard. landscape waste - over 200 cubic yards of landscape waste is composted on site.
    8: All auto shop waste.
    9: Paper. electric shop. batteries. lamp ballasts
    10: No
    11: Oil and batteries
    12: Yes. take to transfer station

13: Yes
14: Batteries
15: Yes, all of the above and scrape metal, wood chips and leaves.
16: Vehicle stuff is taken to shady grove. Reuse salvageable building materials.
17: No response
18: Tire, batteries, oil and office paper, plastics and bottles.

12. If you were in charge of improving and developing a Commission recycling program, what would you do to increase our rate of recycling in the parks, offices and enterprise areas? Please be specific and provide suggestions and details.

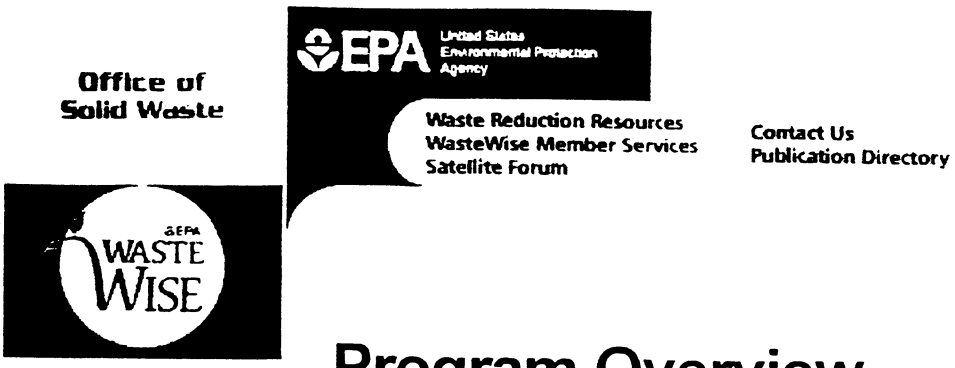
1. Awareness on what can and cannot be recycled.
2. Provide on-site containers for each recyclable. Provide a service to remove materials. Provide more resources for staff and supplies.
3. Paper, aluminum, not glass
4. No response.
5. Currently recycling all materials that are recyclable. It needs to be pickup on a regular basis. Bins are usually overflowing.
6. To be realistic we would need a separate truck to collect the recycling bins. Would need two FTEs to operate the trucks.
7. Recycling mandates must come from the top and be considered part of the work program. Designate parks as "trash free". Remove cans from all parks.
8. Additional training
9. Mandatory recycling for all facilities.
10. More bins, more coordination for pickups.
11. Add recycling program to the commission budget, more training that is site specific. Add additional personnel for recycling. Add a separate truck to collect recycled material
12. Educate and train in-house employees and the public about the importance in recycling and increase signage throughout the parks. Additional staff to sort and pick-up recyclables throughout the local parks, or contract this work to an outside vendor.
13. Do a better job in recycling
14. Increased recycling flow in-house and a trash-free park system externally
15. Recycling committee should survey all facilities to make sure they are doing all the basics and have what is needed to accomplish the goal.
16. Designate additional staff. Make this their job. Designate and specialized trucks.
17. Make all recyclable bins blue. We were given brown ones and they attract trash. Create a form for recording recyclable items.
18. Provide better signage, educate patrons and employees and offer rewards for persons who continue to participate with program. Also, designate a representative for each site to ensure program development.

Key:

1. Steve Moxley - Little Bennett Regional Park
2. Joe Vargo – Northwest Park Golf Course
3. Mary Welter – Sligo Golf Course
4. John Metzer – Needwood Golf Course
5. John Baines – BHRP Interpretation

6. William Gillette – Cabin John Maintenance facility
7. David Vismara – Brookside Gardens
8. Jamie Christianson – Shady Grove
9. Ed Arnold – Shady Grove/CM
10. Karl Hayes – CJ/Region HQ
11. Stacy Parsons – Wheaton Regional
12. Pete Boettinger – Meadowbrook Maintenance Facility
13. John Boyd – Olney Manor Park
14. Melanie Marshall – Meadowside Nature Center
15. Bill Rush – Pope Farm Nursery
16. Doug Ludwig – Rock Creek Regional Park
17. Cathy Law – Wheaton Ice Rink. Wheaton Train and Carousel. Wheaton In-line
18. Dean Turnbull – Cabin John Ice Rink

APPENDIX F. EPA'S WASTE WISE PROGRAM



Program Overview

Joining the WasteWise Program

WasteWise is a free, voluntary, EPA program through which organizations eliminate costly municipal solid waste, benefiting their bottom line and the environment. WasteWise is a flexible program that allows partners to design their own solid waste reduction programs tailored to their needs.
All organizations within the United States may join the program. Large and small businesses from any industry sector are welcome to participate. Institutions, such as hospitals and universities, non-profits, and other organizations, as well as state, local, and tribal governments, are also eligible to participate in WasteWise.

Waste reduction makes good business sense because it can save your organization money through reduced purchasing and waste disposal costs. WasteWise provides free technical assistance to help you develop, implement, and measure your waste reduction activities. WasteWise offers publicity to organizations that are successful in reducing waste through EPA publications, case studies, and national and regional events. These events also provide networking opportunities for organizations to share waste reduction ideas and success stories.

There is no fee for membership in WasteWise. EPA designed WasteWise to be a free, voluntary, flexible program. The amount of time and money you invest is up to you! You are free to set goals that are the most feasible and cost-effective for your organization. In the long run, waste reduction can save your organization money.

The corporate headquarters and/or facilities of a parent company or holding company can join WasteWise regardless of whether its subsidiaries join. Any of the subsidiaries may choose to join at a later date either on their own or as a part

of the parent company's membership.

Complete the registration form, which you may fill out online, download, or obtain by calling the WasteWise Helpline at 800 EPA-WISE.

Setting Up a WasteWise Program

The WasteWise program targets the reduction of municipal solid waste: waste that would otherwise end up in an organization's (or its customers') trash, such as corrugated containers, office paper, yard trimmings, packaging, and wood pallets. Participants, ranging from small local governments and nonprofit organizations to large, multinational corporations, sign on to the program for a 3-year period. Key aspects of successful WasteWise programs include:

Management support

After you have obtained management support and involvement and have joined the WasteWise program, we suggest that you establish a waste reduction team and select a team leader. Garnering the support of a group of individuals will facilitate the design and implementation of your program and ensure the success of achieving your goals.

Waste assessments

To help identify measures you can take to reduce the amount of waste you generate, we encourage you to conduct a waste assessment prior to establishing goals. An assessment can help you identify waste reduction opportunities and establish a baseline for measuring progress. Your Goals Identification Form is due 6 months after you receive your New Partner Packet, which will contain the form and information to assist you in completing it. If you need additional information or technical assistance to complete the form, feel free to contact your WasteWise representative or call the Helpline. You must establish goals in the areas of Waste Prevention, Recycling, and Buying or Manufacturing Recycled Products.

Employee education

Once EPA approves your goals, you will receive the WasteWise logo for internal and external use, with some restrictions. In addition, WasteWise has developed a sample press release and newsletter to assist you in announcing your commitment to WasteWise.

Measurement and reporting

Track your progress and report your results to WasteWise.

Program maintenance

Keep up the momentum by continuously looking for ways to enhance your waste reduction program. Encourage management to make your waste reduction program a priority and maintain employee involvement.

RECYCLING DIRECTIVE

The M-NCPPC Montgomery County Department of Park and Planning is fully committed to REDUCING, REUSING, AND RECYCLING waste generated throughout its park system, offices, properties and programs.

The Department of Park and Planning will create and maintain an efficient, effective, and sustained RECYCLING PROGRAM for employees and patrons which maximizes source reduction, recycling efforts, and the use of recycled materials to the extent that is practicable. Further, the Department will ensure the use of BEST MANAGEMENT PRACTICES in all areas of our operation.

The Department of Park and Planning's RECYCING POLICY AND PROGRAM will meet or exceed the recycling goals of Montgomery County, Maryland.

"This is part of your job responsibility and the job responsibilities of those who report to you."
- Charlie Loehr, Director

Montgomery County Executive Regulation 109-92 "Solid Waste and Recycling" requires Park and Planning to recycle mixed paper, containers, and yard waste. The *Comprehensive Solid Waste Management Plan for the Years 1998 through 2007* establishes a goal to achieve and maintain a 50 percent recycling goal by 2004. It is Park and Planning's goal to achieve a minimum of 50 percent recycling by December 2004.

Materials that must be recycled include mixed paper and commingled material.

What is mixed paper?
- Newspapers and inserts
- Corrugated cardboard
- Cereal and other boxes
- Telephone books
- Computer and office paper
- Unwanted mail
- Catalogs
- All other clean and dry paper

What is commingled material?
- Aluminum cans
- Food and beverage jars and bottles
- Clear and colored plastic bottles with necks
- Metal food and beverage cans
- Clean aluminum foil products such as foil wrap and pie plates

If office sized recycling containers are needed please call Melanie Marshall at 301 924-4141.

Estimated Costs of Managing Park Waste

On-Site Activities		Assumptions
Northern & Southern Divisions		
Emptying Trash Cans	$514,857	[calculated by 4.75 hrs/8 hrs* $867,127(from © 50 & 51)]
Litter Control and Special Clean Ups	$997,000	[calculated at 70% of $1,424,000 - 10% of FY 03 staff cost]
Clean Up of Illegal Dumping	$427,000	[calculated at 30% of $1,424,000 - 10% of FY 03 staff cost]
Central Maintenance	$338,000	[calculated at 5% of approved FY 03 staff budget ($6,761,082)]
Natural Resources	$186,000	[calculated at 5% of approved FY 03 staff budget ($3,722,761)]
Enterprise Facilities	$156,000	[calculated at 2.5% of approved FY 03 staff budget ($6,231,700)]
Subtotal	$2,618,857	
Off-Site Transport		
Northern & Southern Divisions		
via MNCPPC Trash Trucks	$395,270	[calculated by 3.75 hrs/8 hrs*$867,127 (from © 50 & 51)]
via other MNCPPC Trucks	$120,000	[see assumption below, also includes $22,000 tip fee]
via Private Contractor	$22,000	[source: see table at © 52]
Central Maintenance		
via other MNCPPC Trucks	$36,000	[see assumption below, also includes $10,000 tip fee]
via Private Contractor	$3,000	[source: see table at © 52]
Natural Resources		
via other MNCPPC Trucks	$33,000	[see assumption below, also includes $11,000 tip fee]
Enterprise		
via Private Contractor	$66,000	[source: see table at © 52]
Recyclables		
via Private Contractor	$19,000	[source: see table at © 52]
Other Facilities		
via Private Contractor	$5,000	[source: see table at © 52]
Subtotal	$699,270	
TOTAL	**$3,318,127**	

Assumptions Related to the Cost of Non-Trash Truck Trips to the Transfer Station:

Other MNCPPC Truck Trips:	**Nth & Sth**	**CM**	**NR**
Number of Trips	510	135	116
Number of Hours/Trip (incl. loading)	4	4	4
$/Hour	$22	$22	$22
Average Crew Size	1.5	1.5	1.5
Vehicle Related Costs:			
Average Miles	10	10	10
Maintenance Cost Per Mile	$2.50	$2.50	$2.50
Vehicle Depreciation Cost Per Trip	$35	$35	$35
TOTAL	**$98,000**	**$26,000**	**$22,000**

Northern Region - Peak Season Use of Trash-Trucks

Sub-Areas	March - October (Peak Season)								
	Collection Frequency:	# of Staff Involved:	Equip	# of Parks	# of Cans	Estimated hrs to collect:	Labor Cost/ Week	Equip Cost/ Week	Total Cost/ Season
Little Bennett	2	2	8 cu yd	13	88	8	704	225	32515
Shady Grove	4	2	8 cu yd	33	97	8	1408	450	65030
Black Hill Area	3	2	8 cu yd	35		10	1320	337.5	58012.5
Rock Creek Area	7	2	8 cu yd	27		8	2464	787.5	113802.5
Olney Manor Area	2	2	8 cu yd	49		8	704	225	32515
Vehicle Depreciation									18843.75
Total		**10**		**157**		**42**	**6600**	**2025**	**301875**

Southern Region - Peak Season Use of Trash Trucks

Sub-Areas	March - October (Peak Season)								
	Collection Frequency:	# of Staff Involved:	Equip	# of Parks	# of cans	Estimated hrs to collect:	Labor Cost/ Week	Fuel/Maint/ Week	Total Cost/ Season
Meadowbrook Area	7	2	16 cu yd	106	240	8	2464	525	104615
Cabin John Area:									
Regional	7	3	16 cu yd	1	74	2	924	175	38465
Other Parks	6	2	16 cu yd	67	192	8	2112	450	89670
Wheaton Area:									
Regional	7	4	16 cu yd	1	61	2	1232	175	49245
Other Parks	7	2	16 cu yd	40	94	8	2464	525	104615
MLK, Jr. Area	Collected by Wheaton			21	70				
Vehicle Depreciation									18843.75
Total		**13**		**236**	**731**	**28**	**9196**	**1850**	**405453.75**

(50)

Total **707328.75**

Assumptions:

1. Peak season (March - October) = 35 weeks.
2. Off season (November - February) = 17 weeks.
3. Labor costs = $22 per staff, including fringe benefits.
5. Equipment costs:
   a) Fuel & Maintenance = $2.50 per mile (assume 10 miles per route for regional parks and 30 miles per route for other Southern parks, & 45 miles per route for other Northern parks)
   b) Depreciation costs:
      Four Southern Region Trucks - ($75,000 per vehicle depreciated to $0 over 12 years)
      Five Northern Region Trucks - ($60,000 per vehicle depreciated to $0 over 12 years
      One Central Maintenance Truck - ($75,000 per vehicle depreciated to $0 over 12 years)
6. Number of parks includes those parks that do not have trash cans.

Northern Region - Off Season Use of Trash Trucks

Sub-Areas	November - February (Off Season)								
	Collection Frequency:	# of Staff Involved:	Equip	# of Parks	# of Cans	Estimated hrs to collect:	Labor Cost/ Week	Fuel/Maint/ Week	Total Cost/ Season
Little Bennett	1	2	8 cu yd	13	88	4.5	198	112.5	5278.5
Shady Grove	3	1	8 cu yd	33	97	8	528	337.5	14713.5
Black Hill Area	1	2	8 cu yd	35		8	352	112.5	7896.5
Rock Creek Area	3	2	8 cu yd	27		8	1056	337.5	23689.5
Olney Manor Area	2	2	8 cu yd	49		4	352	225	9809
Vehicle Deprection									9281.25
Total		**9**				**32.5**	**2486**	**1125**	**70668.25**

Southern Region - Off Season Use of Trash Trucks

Sub-Areas	November - February (Off Season)								
	Collection Frequency:	# of Staff Involved:	Equip	# of Parks	# of Cans	Estimated hrs to collect:	Labor Cost/ Week	Fuel/Maint/ Week	Total Cost/ Season
Meadowbrook Area	5	2	16 cu yd	106	240	8	1760	375	36295
Cabin John Area	3	2	16 cu yd	67	266	8	1056	225	21777
Wheaton Area	3	2	16 cu yd	41	155	8	1056	225	21777
MLK, Jr. Area	Collected by Wheaton			21	70				
Vehicle Deprection									9281.25
Total		**6**		**235**	**731**	**24**	**3872**	**825**	**89130.25**

Total **159798.5**

Assumptions:

1. Peak season (March - October) = 35 weeks.
2. Off season (November - February) = 17 weeks.
3. Labor costs = $22 per staff, including fringe benefits.
5. Equipment costs:
   a) Fuel & Maintenance = $2.50 per mile (assume 10 miles per route for regional parks and 30 miles per route for other parks)
   b) Depreciation costs:
      Four Southern Region Trucks - ($75,000 per vehicle depreciated to $0 over 12 years)
      Five Northern Region Trucks - ($60,000 per vehicle depreciated to $0 over 12 years
      One Central Maintenance Truck - ($75,000 per vehicle depreciated to $0 over 12 years)
6. Number of parks includes those parks that do not have trash cans.

TABLE X: PARK FACILITIES SERVICED BY CONTRACT

Park/Facility	Number of Dumpsters	Size of Dumpster	Frequency of Collection	Yearly Cost to Collect Dumpster
Central Maintenance Division				
Central Maintenance	One	Ten yard rolloff	As needed	$2,676
Northern & Southern Regions				
Cabin John Area Maintenance Yard	One	Eight yard	Twice a week	$7,080
Olney Manor Area Maint Yard	One	Eight yard	Once a week	$2,447
MLK Jr. Area Maintenance Yard	One	Eight yard	Twice a week	$3,178
Meadowbrook Area Maint Yard	One	30-yard rolloff	As needed	$4,991
Wheaton Area Maintenance Yard	One	30-yard rolloff	As needed	$2,080
South Germantown Rec Park	One	Eight yard	Once a week	$2,447
Sub- Total				$22,223
Enterprise Facilities				
Needwood Golf Course	Two	30 yard rolloff Eight yard	As needed Four times a week	$1,816 $10,247
Sligo Golf Course	Two	30 yard rolloff Six yard	As needed Once a week	$1,324 $3,408
Cabin John Ice Rink	Two	Six yard Eight yard	Twice a week Once a week	 $5,569
Woodlawn Manor Park	One	Six yard	Once a week	$2,303
Little Bennett Golf Course	Three	Eight yard	Twice a week	$10,061
Northwest Park Golf Center	Two	20 yard rolloff Eight yard	As needed Four time a week	$2,946 $11,292
White Oak Golf Course	Two	20 yard rolloff Four yard	As needed Once a week	$710 $1,673
Wheaton Ice Rink	One	Six yard	Twice a week	$3,349
Wheaton Inline Skating	One	Six yard	Twice a week	$845
Little Bennett Campground	Two	Six yard & Four yard	Once a week	$3,134
Rockwood Manor Park	Two	Six yard & Two yard	Once a week	$3,402
Lodge @ Little Seneca Park	One	Four yard	Once a week	$2,130
Brookside Gardens Nature Center	One	Six yard	Once a week	$1,928
Sub-Total				$66,137
Administrative Buildings/Facilities				
9500 Brunette Avenue (Parkside)	One	Four yard	Once a week	$1,392
18041 Central Park Avenue	One	Eight yard	Once a week	$1,577
Saddlebrook Police HQ	One	Eight yard	Once a week	$1,669
Sub-Total				$4,638
TOTAL				**$92,998**

Source: Department of Park and Planning, January 2003

High Cost Estimate: Dumpster Analysis

	Olney Manor	MLK	CJ	Whtn Ice	Brunette	
capacity (cu yd)	8	8	8	6	4	From Table at © 52
lbs/CU	300	300	300	300	300	Industry standard for uncompacted MSW
collections/week	1	2	2	2	1	From Table at © 52
% filled	0.25	0.25	0.25	0.25	0.25	%= 500 tons hauled/2000 tons dumpster capacity
Lbs./Yr.	31200	62400	62400	46800	15600	
Tons/Yr.	15.6	31.2	31.2	23.4	7.8	
Annual Cost	2447	3178	7080	3349	1498.44	
Cost/Ton	**$156.86**	**$101.86**	**$226.92**	**$143.12**	**$192.11**	

Low Cost Estimate: Dumpster Analysis

	Olney Manor	MLK	CJ	Whtn Ice	Brunette	
capacity (cu yd)	8	8	8	6	4	From Table at © 52
lbs/CU	300	300	300	300	300	Industry standard for uncompacted MSW
collections/week	1	2	2	2	1	From Table at © 52
% filled	0.33	0.33	0.33	0.33	0.33	%= 500 tons hauled/2000 tons dumpster capacity
Lbs./Yr.	41184	82368	82368	61776	20592	
Tons/Yr.	20.592	41.184	41.184	30.888	10.296	
Annual Cost	2447	3178	7080	3349	1498.44	
Cost/Ton	**$118.83**	**$77.17**	**$171.91**	**$108.42**	**$145.54**	

Low Cost Estimate
Southern Region: Trash Truck Costing Analysis

	Wheaton Regional	Whtn/MLK Area*	Meadowbrook	Cabin John
Travel Hours/Day	2.5	2.5	2.5	2.5
Tons	63.51	93.36	141.98	99.07
Cost	$56,214	$119,423	$140,910	$149,912
Cost/Ton	$885.11	$1,279.17	$992.46	$1,513.19
Travel Cost/Ton	$276.60	$399.74	$310.14	$472.87
Tip Fee	$44.00	$44.00	$44.00	$44.00
Total Cost/Ton	$320.60	$443.74	$354.14	$516.87

Source: DSWS data for 2002
Source: See Tables at © 50 & 51

* includes four Meadowbrook area parks

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Northern Region: Trash Truck Costing Analysis

	Olney Manor	Shady Grove	Black Hill	Little Bennett
Travel Hours/Day	2.5	2.5	2.5	2.5
Tons	46.97	49.94	76.08	33.05
Cost	$42,324	$79,744	$65,910	$37,794
Cost/Ton	$901.09	$1,596.80	$866.32	$1,143.54
Travel Cost/Ton	$281.59	$499.00	$270.73	$357.36
Tip Fee	$44.00	$44.00	$44.00	$44.00
Total Cost/Ton	$325.59	$543.00	$314.73	$401.36

Source: DSWS data for 2002
Source: See Tables at © 50 & 51

HIGH ESTIMATE
Southern Region

	Wheaton Regional	Whtn/MLK Area*	Meadowbrook	Cabin John
Travel Hours/Day	4	4	4	4
Tons	63.51	93.36	141.98	99.07
Cost	$56,214	$119,423	$140,910	$149,912
Cost/Ton	$885.11	$1,279.17	$992.46	$1,513.19
Travel Cost/Ton	$442.56	$639.59	$496.23	$756.60
Tip Fee	$44.00	$44.00	$44.00	$44.00
Total Cost/Ton	$486.56	$683.59	$540.23	$800.60

Source: DSWS data for 2002
Source: See Tables at © 50 & 51

* includes four Meadowbrook area parks

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Northern Region

	Olney Manor	Shady Grove	Black Hill	Little Bennett
Travel Hours/Day	4	4	4	4
Tons	46.97	49.94	76.08	33.05
Cost	$42,324	$79,744	$65,910	$37,794
Cost/Ton	$901.09	$1,596.80	$866.32	$1,143.54
Travel Cost/Ton	$450.54	$798.40	$433.16	$571.77
Tip Fee	$44.00	$44.00	$44.00	$44.00
Total Cost/Ton	$494.54	$842.40	$477.16	$615.77

Source: DSWS data for 2002
Source: See Tables at © 50 & 51

Calculation of Trash Can Service Costs

Seasonal Calculation

Trash Can $Cost_{peak}$ = (Peak Season Cost + (0.25 x vehicle depreciation)) x 1/# of cans x 1/35 wks x 1/7 days

Trash Can $Cost_{off}$ = (Off Season Cost + (0.25 x vehicle depreciation) x 1/# of cans x 1/17 wks x 1/3days

Yearly Calculation

Trash Can $Cost_{yearly}$ = (Trash Can $Cost_{peak}$ x 35/52 weeks) + (Trash Can $Cost_{off}$ x 17/52 weeks)

Carry-In/Carry-Out Cost Savings

Off-Site Transport Cost		$400,000
Can Emptying Costs		$525,000
	Subtotal	$925,000
Percent of Parks with Cans Removed		50%
Percent of Waste Removal/Transport Time Saved		50%
Cost Reduction - Removal of Cans		$462,500
Cost Increase (High) - Increased Litter Control		$347,000
Cost Increase (Low) - Increased Litter Control		$116,000
Net Cost Savings (Rounded Low)		$120,000
Net Cost Savings (Rounded High)		$350,000

Consolidating In Dumpsters

Cost Per Ton - Dept. Trash Removal and Transport (Low)	$400
Cost Per Ton - Dept. Trash Removal and Transport (High)	$600
Cost Per Ton - Contract Trash Removal and Transport (Low)	$50
Cost Per Ton - Contract Trash Removal and Transport High)	$100
Cost Per Ton Difference (Low)	$300
Cost Per Ton Difference (High)	$550
Total Tons Removed/Transported by N&S Regions	715
Percent of Trash at Regional/Recreational Parks	50%
Cost Savings (Rounded Low)	$110,000
Cost Savings (Rounded High)	$200,000

Combined Total Net Savings

Low	$230,000
High	$550,000